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RECOGNITION OF BELLIGERENCY CONSIDERED IN RELATION TO NAVAL WARFARE.

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Sir FREDERICK POLLOCK, Bart., in the Chair.

INTERNATIONAL Law knows of at least three Recognitions—Recognition of Independence, Recognition of Belligerency, and Recognition of a New Government created by a revolution in an old-established State. The first is a formal admission of a new member into the family of nations; the second gives a community not yet regarded as a State, but seeking to become one, the position of a lawful combatant in civilised warfare; and the third declares that the Powers which accord it are prepared to accept the result of a successful revolution, and look upon the new rulers as the official organ of the State and its formal mouth-piece in international transactions. It is with the second of these I have to deal this afternoon, and with it chiefly from the point of view of hostilities at sea.

When war breaks out between two independent States, each acquires, as a matter of course, all the rights of a belligerent. Other States have nothing to do with giving or withholding these rights. They must respect them at the risk of being treated as law-breakers. They cannot, for instance, shut their eyes to the struggle, and then claim that their subjects may ignore the blockades established by either side or carry contraband unmolested as in time of peace. Nor can they decline to enforce in their ports and waters the rules against the fitting-out of armed expeditions in neutral territory, on the plea that they have no official knowledge of the war. The outbreak of hostilities not only alters the legal relations of the States who are parties to the contest, but it also bestows upon the States who hold aloof from it the rights and obligations of neutrals.

But far other rules apply when one of the combatants is an old-established State and the other a party in it which desires to obtain control of it, or a province or colony which desires to separate from it. The insurgents are not a recognised body-politic, though they are endeavouring to become one. Whatever international rights they possess must be given to them by established States. Questions of extreme delicacy arise in connection with this matter. States may find their commerce so greatly hampered, and their subjects so constantly molested as a result of the struggle, that they are quite unable to ignore it. Yet, on the other hand, if they treat the revolted community just as they treat the ordinary members of the family of nations, the parent State is certain to complain bitterly. A middle course has, therefore, been devised. By the grant of what is called Recognition of Belligerency, a third Power declares its intention to look upon the insurgents as lawful combatants, clothed with all the rights and obligations of a regular State as far as the war is concerned, but no further. The community whose belligerency is thus recognised can send and receive no regular diplomatic agents, make no formal treaties, and take no part in the official intercourse constantly going on between civilised nations; but its commissions are regarded as lawful commissions, its cruisers as lawful cruisers, and the authorisation of its Government is sufficient to cover the individual responsibility of its citizens for acts done by them in accordance with the rules of civilised warfare. But caution is necessary in granting even this modified form of recognition. It gives to the insurgents some sort of an international *status*, though an imperfect one; consequently they are keenly desirous of obtaining it, and the Government against which they are in revolt is equally desirous of preventing or delaying the concession. Thus, in April, 1891, the Congressional Party in Chile, which had revolted against President Balmaceda, asked, through Rear-Admiral Hotham, for recognition as belligerents by Great Britain,¹ and between October, 1893, and February, 1894, the leaders of the fleet in insurrection against the Government of Brazil made no fewer than three requests for recognition to the authorities of the United States.² On none of these occasions was the prayer of the insurgents granted; but the fact that it was pressed with great vigour by one side, and vehemently repelled by the other, shows how important the question of recognition was deemed by both.

If a third Power is desirous of intervening in the struggle it naturally recognises both the belligerency and the independence of the insurgents; but such intervention is sure to provoke a war with the parent State, and is generally meant to do so. France, in 1778, expected the hostilities which Great Britain commenced against her in consequence of the treaty she negotiated with the revolted North American Colonies; and in 1780 war was commenced with Holland because of the discovery that the States-General had entered two years before into a secret agreement with the representatives of the American Congress.³

¹ British Parliamentary Papers, *Chile*, No. 1 (1892).

² United States, *Foreign Relations*, 1893.

³ Massey, *History of England during the reign of Geo. III.*, pp 274, 382-3.

When Powers who have no intention of taking part in the contest are brought face to face with the necessity of coming to some decision with regard to it, they desire to know what are the circumstances under which recognition of belligerency may be given without affording just grounds of offence to the parent State. This is the first question of any difficulty that arises in connection with our subject; but it need not detain us long this afternoon. It was so thoroughly sifted in the controversy that arose out of the Recognition of the Belligerency of the Southern Confederacy by Great Britain in 1861, that a writer of to-day need do little more than state the conclusions which commended themselves to the great majority of statesmen and jurists more than thirty years ago.

Belligerency is a fact. To recognise it is to take formal note of a fact. To declare that the fact exists when it does not is an unfriendly act to the parent State. To take formal note of it when there is no need to make an official pronouncement upon it is also an unfriendly act to the parent State. But if there can be no doubt about the fact, and if the interests of the recognising State are so closely affected by the struggle that it is needful for her rulers to decide how they will regard it, then Recognition of Belligerency is at once a right and a duty, and the grant of it to the insurgents should not be regarded as an act of unfriendliness towards the Government which is attempting to reduce them to subjection.

As to the interests of the recognising State, there can be little room for disagreement. If the struggle is confined to land warfare, then no Powers save those whose frontiers march with those of the contending parties are likely to be laid under the necessity of settling how they shall treat the agents and operations of the community in revolt. But if the struggle is maritime on the part of one or both of the combatants, it touches of necessity the interests of all States possessed of a sea-borne commerce. They must open their eyes to such a war, if war indeed it is.

This brings us to the question: What do we mean by war? What circumstances must concur in order to bring into existence that "fact of belligerency" of which we have just made mention? War is something more than a mere conflict of armed men. It must be carried on by public forces, enrolled by political communities and authorised to combat by the accepted rulers of those communities. The rulers in question must control the population and resources of a territory capable of at least a rough geographical description. The forces in question must observe the rules of warfare adopted by civilised States. In other words, insurgents must possess an organised Government, a fixed territory, and regular agents of warfare, before their insurgency can be held to amount to belligerency. By this it is not meant that their Government must be as effective in all its departments as that of an old-established and powerful State, or that the territory within which it exercises control should not vary from time to time with the changes and chances of the conflict, or that their naval and military establishments should be so highly organised as to satisfy the best admirals and generals of the time. To require perfection in such

matters would be absurd ; but there must be some approximation in all of them to the standard attained by the ordinary members of the family of nations. A revolutionary Junto, here to-day and there to-morrow, hunted about from place to place by the agents of the established order, is not an organised Government. A sphere of operations varying from time to time as leaders and followers rove about the country is not a fixed territory. A number of guerilla bands, lurking among hills and forests, is not a regular army. Unless an insurrectionary movement has advanced far beyond this stage, it does not amount to war, as war is understood by civilised States ; and till it has become a war in the sense referred to, other Powers ought not to recognise it, unless it is their deliberate policy to assist the insurgents and force on a conflict with the parent State. In that case their action must be judged on moral grounds, just as we should judge any other aggressive step taken with a view to hostilities. It ceases to come under the ordinary rules of international intercourse.

Sometimes there is great difficulty in judging whether the elements which constitute the complex fact of belligerency are in existence or not. If the struggle is distant, and the insurgents have not succeeded in making it maritime, other Powers may for a long time be destitute of that clear and definite information on which alone they ought to act in a matter of such importance. This is brought out with great ability in a recent American pamphlet on "The Recognition of Cuban Belligerency," a copy of which I owe to the courtesy of the author, Mr. J. H. Beale, jun., of Harvard University. He says of the present position of affairs in the island of Cuba :—"We know from common report that fighting is being done, and that the avowed purpose of one party is to free Cuba from the control of Spain. But whether a Civil Government has been constituted which controls the military operations, who can say ? By recognising belligerency we free Spain from responsibility for wrongs done by the belligerents ; to what organisation can we look in place of Spain ? Where is its capital ? Who is its minister of foreign affairs ? What are its actual territorial boundaries ? At what point in Cuba shall we cease to be within the control of Spain, and come within the power of another *de facto* Government ? These questions may be answerable ; we cannot truthfully say that the insurgents are belligerents unless we know that they are answerable, and that we may, at least upon occasion, discover the answers. Still further, can we be sure that they are observing the rules of civilised war ? We have no information on this subject except from Dame Rumour, and she says one thing to-day and another to-morrow." But I need hardly point out that, when the insurgents are in possession of a sea-board, the definition of their position becomes more easy as it becomes more pressing. A cruiser carrying the flag and the commission of the Revolutionary Government is a concrete fact, which cannot be mistaken or overlooked. An effective blockade is another, whether it be instituted by the insurgents or against them. Of its existence there can be no doubt, though that alone would not justify recognition. But if war, as we have defined it, is being waged, and appears likely to continue to be waged, then any State whose

interests are closely affected thereby may accord to the insurgents Recognition of Belligerency without incurring blame for a breach of the law of nations. The parent State will probably protest. But it may console itself by reflecting that it gains in definite advantages almost as much as it loses in prestige. As Mr. Adams, the American Minister in London remarked, when commenting in 1861 upon the concession of belligerent rights to the Confederates by Great Britain:—“At any rate, there was one compensation, the act had released the Government of the United States from responsibility for any misdeeds of the rebels towards Great Britain. If any of their people should capture or maltreat a British vessel on the ocean, the reclamation must be made only on those who had authorised the wrong.”¹

This brings us to the next great question we have to discuss this afternoon: What are the effects of Recognition of Belligerency? Before attempting to arrange the answer under the divisions into which it naturally falls, I may remark in passing that no insurgent community, however fully it may satisfy the conditions we have just enumerated, has a legal right to have its belligerency recognised. It may have a moral claim, but it cannot demand recognition as a right. International Law leaves each State free to judge for itself whether it will recognise or refrain from recognising. Recognition when given is always accorded as a matter of policy and self-interest, and the grant of it by one State lays no obligation upon others to follow its example.

But to return to our present question. In attempting to answer it we must consider, first, the effect of recognition upon the recognising State; secondly, its effect upon the community whose belligerency is recognised; and, thirdly, its effect upon the Power with which the recognised belligerent is at war. Let us take them in order, beginning with

THE EFFECT OF RECOGNITION OF BELLIGERENCY UPON THE RECOGNISING STATE.

There can be no doubt that when a neutral Government opens its eyes officially to the existence of a civil war, it gives up the right of holding the regular authorities responsible for any damages inflicted upon its subjects or their property by the insurgents, or any wrong done by them to itself. While the struggle is technically regarded as nothing more than an outbreak of lawless men troubling a friendly country with their violent proceedings, the Government of that country is bound to make reparation and compensation for any acts of its ragamuffins whereby other States, or their subjects, are made to suffer. But when the legal theory is changed, and the insurgents become lawful combatants with a Government at their back capable of controlling their movements, then international responsibility shifts to the shoulders of those who govern the revolted community. And since they are liable to other States, it is clear that the authorities of such States must have some means of communicating with them. Official diplomatic intercourse there cannot be, because a resort to it would imply recognition of the independence of the

¹ Wharton, *International Law of the United States*, Sec. 69.

community thus approached. But communications pass through consuls, or other and less formal agents. When, at the commencement of the American Civil War, the Government of Great Britain wished to obtain assurances from the Government of the Southern Confederacy as to the rules of maritime warfare to be applied to British subjects by the Southern cruisers, Mr. Bunch, Her Majesty's Consul at Charleston, was instructed to open communications with President Jefferson Davis. But he was warned that the negotiation must be of the backstairs order. "It is essential," wrote Lord Lyons to him, under date July 5th, 1861, "that you should act with great caution in order to avoid raising the question of the recognition of the new Confederation by Great Britain. On this account I think it unadvisable you should go to Richmond or place yourself in direct communication with the central authority which is established there. The most convenient course will, probably, be for you to take advantage of the intercourse which you naturally hold with Mr. Pickens, the Governor of the State of South Carolina." Mr. Bunch found himself unable to communicate with Mr. Pickens, who was away from Charleston; but, acting in concert with M. Belligny, his French colleague, he sent an agent to Richmond, who procured the acceptance of the second, third, and fourth articles of the Declaration of Paris by the authorities of the Confederacy.¹ These proceedings on his part were made ground of complaint against him when they came to the knowledge of the Cabinet of Washington. His *exequatur* was withdrawn, and it was seriously contended that applications to the Confederate Government for security and redress ought to be made through the President of the United States. Earl Russell had no difficulty in demonstrating the untenable nature of this proposition. In his despatch of November 26th, 1861, he not only pointed out the impossibility of obtaining satisfaction in the way suggested, but declared that "Her Majesty's Government hold it to be an undoubted principle of International Law that when the persons or property of the subjects or citizens of a State are injured by a *de facto* Government, the State so aggrieved has a right to claim from the *de facto* Government redress and reparation; and also that, in case of apprehended loss or injury to their subjects, States may lawfully enter into communication with *de facto* Governments to provide for the temporary security of the persons and property of their subjects."² This is sound doctrine. All States find themselves obliged from time to time to have unofficial intercourse with agents whom they cannot officially recognise. As Wharton says in his *International Law of the United States* (Vol. I., p. 514):—"When a belligerent is recognised as such, this implies an intercourse, at least between agents, in reference to terms of belligerency." But these statements do not exhaust the effects of recognition upon the Power which recognises. It is bound to treat the operations of the belligerents as lawful hostilities, and submit to all the disabilities imposed by International Law upon neutral States and neutral subjects. If its merchant-vessels are captured in an attempt to break an effective

¹ British Parliamentary Papers, *North America*, No. 3, 1862.

² British Parliamentary Papers, *North America*, No. 4, 1862.

blockade, established by either side, they may be condemned as prize of war. If its merchants send contraband goods to the ports of one of the parties they must submit to the confiscation of such goods when captured by the commissioned cruisers of the other. If the property of its subjects situated in the territory of a belligerent is wantonly confiscated by the Government of that belligerent, it has a claim for redress; but if damage or destruction take place in the course of military or naval operations, and as incidents of warfare, the loss must fall upon the owners.

Our next task is to discuss

THE EFFECT OF RECOGNITION OF BELLIGERENCY UPON THE COMMUNITY WHOSE BELLIGERENCY IS RECOGNISED.

A marked contrast exists between the position of recognised and unrecognised insurgents. Those who were formerly international pariahs, distinguished only on sufferance from banditti and pirates, become by recognition lawful combatants on a footing of equality with the naval and military services of old-established States. The mother country gives an implied recognition when she consents to treat the forces arrayed against her as enemies rather than traitors. This is generally done partly from motives of humanity and partly from fear of reprisals should the severer course be followed. In 1862 the Confederate Government threatened retaliation if the captured crews of the "Savannah" and the "Jefferson Davis" were executed as pirates; and though the Federal Courts condemned them, they were transferred to military control as prisoners of war. Moreover, cartels were made throughout the American Civil War for the exchange of prisoners taken in the course of hostilities on land, and the ordinary *commercialia belli* were entered into between the proper officers on both sides.¹ When there is a real war, it is impossible for a civilised Power not to treat even its own rebels as belligerents, though it is always careful to maintain in words its right to treat them as traitors. Recognition granted by other States is of a fuller and less grudging kind. It is usually given by a formal proclamation, and till it is withdrawn in an equally public manner the insurgents obtain under it as a matter of right all the privileges conferred on belligerents by International Law. But it must be clearly understood that recognition confers rights in respect of the recognising State only. One Power cannot by its unilateral act alter the legal position of other Powers who have not taken similar action. On the other hand, when it has once recognised the belligerency of the revolted community, it must accept all the consequences of its own performance. It cannot treat the insurgents as lawful combatants for some purposes, and unauthorised disturbers of the peace for others. Their operations must be respected even when they injure neutral interests, as in the case of blockade. The only restraints the neutral Power may place upon their action are those which it might place equally upon the operations of the armed forces of recognised and independent States. An attempt to give a complete list of the rights gained by a revolted community as the result of the recogni-

¹ Wharton, *International Law of the United States*, Sec. 384.

tion of its belligerency would be tedious and unnecessary; but the chief of them may be summarised as follows:—

It may carry on informal negotiations with the recognising States. It may grant licences and clearances, levy duties, and regulate trade at the ports under its control.

It may stop and search neutral vessels on the high seas.

It may capture neutral ships laden with contraband of war, or engaged in the performance of unneutral services for its adversary.

It may enforce blockades.

It may set up Prize Courts.

It may claim redress from a neutral State for captures made by its adversary in neutral waters, or other violations of neutral sovereignty which have resulted in unlawful attacks upon its ships or its territory.

But, on the other hand, it must be careful to fulfil all the obligations which are implicitly contained in the one great duty of carrying on the war according to the usages obtaining among civilised States. It must respect the sovereign rights of neutrals and the integrity of their territory. It must obey all reasonable regulations made by them for the protection of their neutrality. Its Prize Courts must apply the rules of International Law. Its blockades must be effective, and its search as little troublesome and offensive as such a proceeding can be.

We have now to consider

THE EFFECT OF RECOGNITION OF BELLIGERENCY UPON THE PARENT STATE.

The grant of such a privilege to insurgents by Powers who are no parties to the contest must always be a blow to the *amour-propre* of the Government against which the insurrection is directed, however considerate may be the methods of the recognising State, and however clear the necessity for recognition. For the grant implies that the mother country has not been able to stamp out the hostile movement. It proclaims that in the judgment of others the insurgents have so far succeeded as to have established a Government and levied a regular war. Their success may be temporary. By and by they may be crushed; but, meanwhile, they have scored an important point in the diplomatic and military game. Yet it is a great mistake to suppose that the advantage is all on the side of the recognised belligerent. Indeed, unless the rebels happen to have a superiority of force at sea, it may be doubted whether the parent State does not gain at least as much as it loses. Not only does it escape responsibility to the recognising Powers for unlawful acts done by the insurgent forces; but it obtains the liberty to exercise on the high seas against neutral ships the right of visit and search. Other Powers must respect its blockades, and allow it to capture and condemn any of their merchant-vessels which attempt to break them. They must also submit to the confiscation of contraband of war carried to an insurgent destination by their ships

of commerce. In short, they have placed themselves under all the disabilities of neutrals in a regular war, to the great advantage of the side which is strongest at sea; and that side is almost always the mother country.

Hitherto we have been engaged in gathering together the results of settled controversies. We have collected and classified, under appropriate heads, rules which may be said to have won the general assent of the civilised world. I do not venture to assert that none of them would be controverted by any jurist of repute; but I do claim that taken together they make up a body of law which no State could disregard with impunity. We are now about to enter upon far less certain ground; and it behoves us to walk warily, lest we be swallowed up in a morass of unsubstantial theories. Few international questions are more difficult than those which are connected with the position of insurgents whose belligerency has not been recognised; and it is with these that I propose to deal in the remainder of the present paper.

What treatment is to be accorded to persons who are in revolt against the mother country, but have not succeeded in obtaining from any other Power a formal Recognition of Belligerency? International Law has little part to play in providing an answer to this question, unless the struggle is maritime. A State deals with its domestic rebels as it thinks fit; and it is unhampered by any other considerations than its own views of what humanity requires, unless the citizens and officials of foreign States are brought into direct contact with the warlike operations. This will rarely happen when the conflict is carried on by land, and by land alone. The case of Cuba at the present time affords an apt illustration. The insurgents possess no port, and have not been able to send a single cruiser to sea. But they have some thousands of men in the field, and are able to wage warfare with the Spanish troops over a large part of the area of the island. How are they treated? Tales of gross barbarity are rife in some quarters, and indignantly denied in others. But whether the generals of Spain are models of chivalrous humanity or "monsters of abominable cruelty," is a matter with which other Powers have legally no concern. For them the Cuban struggle does not exist. They have no official knowledge of it. Vague rumours of trouble and disorder may have penetrated into their foreign offices; but they have not disturbed the majestic calm of those Olympian abodes. It is for Spain, and Spain alone, to deal with her local disturbances. Only when some subject of a foreign State becomes involved in them does an international question arise. A Government cannot in one and the same breath proclaim to the world that there is no war in its dominions, and affirm its right to apply the strict rules of warfare to foreigners captured in the act of aiding hostile operations against it. Doubtless, such persons take their lives in their hands; but they are entitled to trial before a civil tribunal. If war does not exist, its legal consequences cannot exist. Considerations such as these apply to the case of the American citizens lately captured by Spain on board the filibustering schooner "Competitor." They were insisted upon by Great Britain in the case of the "Virginius," which arose in 1870, during

the previous insurrection in Cuba;¹ and they seem to me to rule the present controversy between the United States and Spain, whatever may be the correct interpretation of the treaty of 1795 and the protocol of 1877, both of which bear directly upon the matter in dispute.² We see, therefore, that an attitude of nescience on the part of foreign Powers is not without its disadvantages to the parent State, though the latter greatly prefers it to an attitude of knowledge and recognition. Even if no inconvenient strangers intrude themselves into the contest, there is always the burden of responsibility to other Powers for injurious acts on the part of the rebels. Spain is feeling this at the present moment. She has to face a claim for compensation put forward by the Cabinet of Washington in the interest of the citizens of the United States whose plantations in Cuba have been destroyed by the insurgent forces. If the belligerency of the latter had been recognised, the American claim would have been sent in to their Government. But as the parties concerned are at present officially blind to the war, Spain must make reparation for acts over which she had no control.

But what is exceptional in the case of a contest fought on land exclusively becomes the rule when the struggle is maritime. It must affect the commerce of other Powers; and a number of delicate questions arise as to the legal position of the insurgents, and the rights of the constituted authorities and the foreign States whose interests are involved. We cannot dispose of these questions in a summary way by a few deductions from the principle that an unrecognised insurrection is nothing more than a domestic disturbance. It is impossible to argue that a State can ignore operations in the course of which her ships are stopped at sea, the property of her merchants forcibly taken, and her subjects exposed to the risks of bombardment. She is practically forced to take action of some kind. Yet if she follows to its logical conclusion the theory of unauthorised violence, she must treat the rebels as pirates, unless the constituted authorities are willing to make full compensation for their acts; and even in such a case it might be necessary to take immediate steps to stop the evil instead of suffering it to continue in the hope of receiving reparation at some future time. But if foreign States capture insurgent cruisers and hang their crews, they do the work of the regular Government in putting down the rebellion, and thus interfere with crushing effect in a struggle with which they profess to have no concern, and the very existence of which is officially unknown to them. Here is one ugly problem, but it is not the only one. Others follow. Can a Government divest itself of responsibility for the acts of a revolted vessel or squadron? Can foreign States hold intercourse of any kind with unrecognised insurgents? Can they interfere to prevent or limit acts of force attempted by either party to the contest? Can they recognise the belligerency of a fleet which has no land basis for its operations? These questions are, as far as I know, new: they have come to the front within recent years. The only way to attempt their solution is to inquire what

¹ Hall, *International Law*, Sec. 82.

² *Treaties of the United States*, pp. 1,008, 1,031.

has been done by States in cases that have actually arisen, and see whether it is possible to deduce from practice any rules capable of general and beneficial application.

In the last quarter of a century there have been no less than five cases in which the conflict between an established Government and a revolutionary movement was mainly or largely maritime, and in every one of them the constituted authorities disclaimed responsibility for the actions of the insurgent vessels. They are :—

1. The revolt of Cartagena against the Government of Spain, in 1873.
2. The revolt of the "Huascar" against the Government of Peru, in 1877.
3. The revolt of the province of Baranquilla against the Republic of Colombia, in 1885.
4. The revolt of the Chilean Congressional Party against President Balmaceda, in 1891.
5. The revolt of Admirals de Mello and da Gama against the Government of Brazil, in 1893 and 1894.

In the first of these cases the Spanish Government issued a decree declaring the crews of the revolted ships to be pirates; authorising the commanders of vessels of war of friendly Powers to detain the ships and try their crews for piracy, but "reserving to itself the property of the vessels."¹ In the third case the authorities of Colombia declared the vessels held by the revolutionists to be piratical and liable to capture by any Power.² In the second, fourth, and fifth cases the words "pirate" and "piratical" were not used in the proclamations issued by the established rulers; but the phraseology adopted came in effect to the same thing as a declaration of piratical character. The Government of Peru disclaimed responsibility for the acts of the rebels on board the "Huascar," and authorised her capture by whomsoever could seize her.³ President Balmaceda contented himself with the statement that "the revolted part of the national fleet is without the law";⁴ while the insurgent Brazilian vessels were declared "to have forfeited their immunities, privileges, and prerogatives, together with the protection of the national flag."⁵

It is obvious that the main object of the established Governments in all these cases was to evade the rule of International Law which fixes upon the constituted authorities international responsibility for the acts of unrecognised insurgents. They desired to avoid recognition of the belligerency of the insurgents by foreign Powers and at the same time to obtain one of the chief advantages to themselves of such recognition. And, secondly, they were anxious to bring about a condition of affairs in which the war-vessels of neutral States would attack their rebels for them. This attempt to eat the cake and have it too was most transparent in the Spanish case,

¹ British Parliamentary Papers, *Spain*, No. 2 (1874).

² Wharton, *International Law of the United States*, Sec. 381.

³ British Parliamentary Papers, *Peru*, No. 1 (1877).

⁴ British Parliamentary Papers, *Chile*, No. 1 (1892).

⁵ *Foreign Relations of the United States* (1893).

when the authorities of Madrid generously accorded to friendly Powers the right to hang any insurgent crews they might capture, but stipulated that the vessels should be handed back to themselves as lawful owners. These precious privileges were not fully exercised by Great Britain and Germany, the only Powers whose cruisers made any captures from the insurgents. They restored the ships to the central Government, but set the crews at liberty. The proclamation of the Cabinet of Madrid seems, however, to have been accepted without question. No protest was made against its implied disclaimer of responsibility; and it was mentioned in a Foreign Office despatch which declared that if the insurgent vessels "commit any acts of piracy affecting British subjects or British interests they should be treated as pirates, the decree of the Spanish Government having deprived them of the protection of their flag."¹ In the Peruvian, Columbian, and Brazilian cases, the right of the Central Government to divest itself of responsibility to neutrals was tacitly recognised; but in the Chilian case it was challenged. When Mr. Kennedy, the British Minister at Santiago, received in January, 1891, an official copy of the decree which outlawed the revolted fleet, he declined to recognise "the validity of the declaration of non-responsibility."² I venture to think that the last course is the only one consistent with sound principles. A Government can treat its own vessels as pirates if it thinks fit. What it does to them is a matter of municipal regulation with which other States have no concern. But it cannot escape from its international obligations by its own mere motion. Neutral Powers can still hold it responsible for outrages upon their subjects, if they prefer to seek redress in that way, rather than deal directly with the rebellious perpetrators of the wrongs.

What, then, is the international effect of such proclamations and decrees as those with which we have been dealing? I answer, Nothing. They can give to neutral Powers no rights, just as they can take away no obligations from the Governments which issue them. A foreign State need not wait to be told that the cruisers of unrecognised insurgents are pirates before it can use force to prevent or punish their attacks upon the persons or property of its subjects. Pirates or no pirates, they are irresponsible and unauthorised rovers engaged in depredating upon the commerce it is bound to protect; and, as the Government against which they have revolted is for the time unable to control them, the Powers which suffer from their proceedings are entitled to use towards them as much force as will free neutral commerce from further molestation. The question of their piratical character is not raised thereby. The neutral merely exercises its undoubted right of self-protection. It says in effect to the insurgent cruisers, "You are not lawful belligerents; but as long as you operate against your own Government and its supporters, I shall not interfere with you, for I have no right to take sides in a domestic quarrel. But if you attempt to perpetrate upon my subjects severities which nothing but a state of recognised belligerency will justify, I shall protect them, and coerce you to the extent required to secure

¹ Mr. Hammond to Secretary of Admiralty, July 24th, 1873.

² Mr. Kennedy to Lord Salisbury, January 12th, 1891.

their safety." This principle applies to the parent State as well as to the insurgents, for the former has no more right than the latter to perform warlike acts against foreigners when there is no war in existence.

The views just enunciated seem to have dictated most of the interferences with the freedom of action of the parties immediately concerned in the five cases we have been engaged in considering. But they were not clearly set forth or applied with absolute consistency, and considerations connected with piracy were often intruded among them. At the beginning of the revolt of the Spanish squadron at Cartagena, the German ironclad "Frederic Carl" captured the insurgent vessel "Vigilante," chiefly because she carried the red flag of revolution. But the subsequent capture of the "Vittoria" and "Almanza" by the "Frederic Carl" and H.M.S. "Swiftsure" was defended on the ground that they had just bombarded Almeria, a defenceless town containing much foreign property; and the instructions issued to our naval commanders bade them limit their interference to what was necessary for the protection of British trade, and prevent bombardments till the life and property of British subjects were placed in safety. France and Germany acted in concert with this country, and the rules laid down for the guidance of their officers were identical in principle with our own.¹

In the Peruvian case the "Huascar" was an irresponsible rover of the seas in solitary insurrection against the Government of her country. Rear-Admiral de Horsey, commanding the English Squadron in the Pacific, attacked her after she had stopped British vessels at sea, and seized a barque laden with coal belonging to British subjects. He justified his action on the ground that, since the Peruvian Government had disclaimed all responsibility for the rebel cruiser, her acts in molestation of British commerce were piratical. The law officers of the Crown sustained this view, which was, however, combatted by the Opposition in the House of Commons. It is not necessary for us to go into the technicalities of the question. For our purpose all we need know is that a British Admiral attacked an unrecognised insurgent cruiser as soon as she interfered with British trade, and was supported in this course by the British Government.²

The next occurrence on our list took place in 1885, when the brigantine "Ambrose Light," carrying the Columbian flag, was captured on the high seas by the United States gun-boat "Alliance." She was tried at New York as a pirate, because of depredations and hostilities committed by her in the course of the struggle between the Government of Colombia and certain insurgents who held the Province of Baranquilla. She bore the commission of the rebellious Governor of the province; but as the belligerency of the revolutionists had not been recognised at the time of her seizure, the Court held that she was technically a pirate when taken, but refused to condemn her on the ground that the American Secretary of State had, since her capture, used words in a despatch which

¹ British Parliamentary Papers, *Spain*, No. 2 (1874).

² British Parliamentary Papers, *Peru*, No. 1 (1877); Hansard, *Third Series*, Vol. CCXXXVI., pp. 787, 802.

amounted to an implied recognition of her belligerency. President Cleveland expressed dissent from this view in his Annual Message of 1885. He maintained that a denial of the doctrine of the Colombian Government that the vessels in rebellion against it were pirates did not amount to an admission of their belligerent *status*. The case, therefore, settled nothing. It disappeared as a useful precedent in the quagmire of a discussion on piracy.¹

The two remaining cases are full of instruction. In each a group of Powers planned and carried out concerted action with regard to both the parties in a maritime struggle between an established Government and a revolted fleet acting in the interest of insurgents whose belligerency was not recognised. Any deductions we may be able to draw from their proceedings have, therefore, a greater authority than conclusions based upon the action of one or two States only.

In January, 1891, a few days after the commencement of the revolt of the Congressional Party in Chile, the diplomatic representatives of Great Britain, Germany, France, and the United States met the Chilian Minister for Foreign Affairs. They agreed that the blockade of Valparaiso and Iquique, notified by the revolted fleet, was illegal, and instructed their Consuls in the two ports to protest against it.² This was done; and the protests were backed up by the concentration of a considerable number of neutral men-of-war in Chilian waters, the strongest force being the British Squadron under Rear-Admiral Hotham. The insurgents were careful to conciliate neutral opinion. They committed few violent acts against British shipping.³ Their blockades were not enforced against foreign vessels; and in February, 1891, at the instance of Rear-Admiral Hotham, their Naval Commanders were instructed by the proper officer of their Government that "it is absolutely necessary to respect foreign interests, and to limit our vigilance in ships under a foreign flag solely to articles which are contraband of war."⁴ This reservation of a right to capture contraband goods seems to have been acquiesced in by the British Commander and the other neutral representatives. Rear-Admiral Hotham contented himself with pointing out that cargoes of coal and provisions *bond fide* consigned to non-combatants could not be considered as contraband of war. He added that "any seizure or detention of vessels carrying such cargoes is a gross breach of their neutral rights," thus admitting by implication the legality of the capture of neutral vessels laden with goods undoubtedly contraband.⁵ I cannot, however, understand on what principle a blockade can be held to be unlawful, while the seizure of contraband of war is lawful. Both operations are permitted to regular belligerents. The right to perform them is given by war, and by war alone. Neutrals are not bound to submit to either if there is no war in the full legal sense of the word. The distinction

¹ Wharton, *International Law of the United States*, Sec. 381.

² Mr. Kennedy to Lord Salisbury, January 22nd, 1891.

³ Mr. Kennedy to Lord Salisbury, February 17th, 1891.

⁴ Order of Commodore Montt, dated Iquique, February 9th, 1891.

⁵ Rear-Admiral Hotham to Commodore Montt, February 6th, 1891.

drawn between them seems to point to some confusion of ideas on the part of the British Foreign Office. I cannot help thinking that it was not fully prepared for the problems which suddenly confronted it at this time; and I am confirmed in this view by finding a brief note to Messrs. Smith and Service, sent at the beginning of the insurrection. It runs thus:—"Assuming effective blockade to exist, escort through it cannot be given."¹ One ought not, perhaps, to lay much stress upon a telegraphic despatch, forwarded in haste to meet an emergency; but certainly the words I have quoted appear to indicate that Great Britain was at that moment prepared to recognise the insurgent blockades, provided only they were effective. If that be so, she changed her mind very quickly, and I cannot help thinking that in this case second thoughts were best. In other matters the theory was maintained that neutral Powers had no concern with domestic disturbances and would not permit the exercise of warlike operations against their subjects. We declined to accept the Chilian Government's declaration of non-responsibility for the acts of the insurgent fleet.² We refused to recognise the validity of the decree whereby it closed ports in the effective possession of the insurgents,³ or to allow it to exact a second time from British vessels export duties which had been already paid to insurgent authorities in possession of the port of export.⁴ We declared we should hold it responsible for any loss that might fall upon British subjects, if it carried out its proposed policy of destroying the nitrate factories;⁵ and we declined to put the Foreign Enlistment Act into force in our ports.⁶ Further, it may be noted that in this case, as in all the others, communications between neutral Powers and the rebel leaders were made through the consuls and naval or military officers of the former, and not through their diplomatic representatives.

The next and last case need not detain us long. It commenced in September, 1893, and lasted till March, 1894. During these seven months the greater part of the Brazilian fleet was in rebellion against the established Government. Under Admirals de Mello and da Gama, it occupied the inner harbour of Rio de Janeiro, and kept up an artillery duel with the forts and batteries that remained faithful to the regular authorities. As soon as the insurrection commenced, the various foreign legations concerted measures to keep open trade and prevent a bombardment. On October 2nd, 1893, de Mello was informed by the commanders of the English, American, French, Italian, and Portuguese naval forces before Rio that they would resist, by force if needful, any attack on the city; and the diplomatic representatives of the Powers in question requested the Government to refrain from fortifying the inhabited and commercial quarters. Thus the insurgent Admiral was to be deprived of any pretext

¹ Foreign Office to Messrs. Smith and Service, January 24th, 1891.

² Mr. Kennedy to Messrs. Graham, Rowe and Co., February 5th, 1891.

³ Lord Salisbury to Mr. Kennedy, April 10th, 1891.

⁴ Lord Salisbury to Mr. Kennedy, April 11th, 1891.

⁵ Lord Salisbury to Mr. Kennedy, February 26th, 1891.

⁶ Foreign Office to Board of Trade, July 17th, 1891.

for attack, and a sort of *modus vivendi* would be established. This was done; and in the course of the diplomatic correspondence on the subject the foreign representatives disclaimed all design of interfering in the internal affairs of Brazil, and declared that their action would be limited to "the necessity of protecting the general interests of humanity and the lives and property of their countrymen."¹ On the whole, these limitations were observed. Anything like a general bombardment of Rio de Janeiro was prevented. Neutral merchantmen were protected while loading and unloading; and on one occasion, after an American boat had been fired upon by an insurgent vessel, the American Admiral Benham returned the fire from the "Detroit." After this occurrence the insurgents became more careful. The principles which should guide foreign Powers in such cases were laid down in a despatch of January 11th, 1894, from the late Judge Gresham, then Secretary of State in President Cleveland's Cabinet, to Mr. Thompson, the American Minister at Rio. The views therein expressed are, with one exception, so sound, that I make no apology for quoting them. The American statesman wrote:—"An actual condition of hostilities existing, this Government has no desire to restrict the operations of either party at the expense of its effective conduct of systematic measures against the other. Our principal and obvious duty, apart from neutrality, is to guard against needless interference with the innocent and legitimate neutral interests of our citizens. Interruption of their commerce can be respected as a matter of right only when it takes two shapes—either by so conducting offensive and defensive operations as to make it impossible to carry on commerce in the line of regular fire, or by resort to the expedient of an announced and effective blockade."² The exception to the general soundness of these views is to be found in the last clause. A fleet of irresponsible sea-rovers has no right to establish a blockade against foreign vessels. The more effective the blockade, the worse is the outrage. None but recognised belligerents in a regular war can exercise belligerent rights against neutral commerce.

We are now in a position to sum up the results of a long inquiry. Much uncertainty has been felt as to the rights and duties of neutral Powers towards a maritime force whose belligerency has not been recognised. The rules of International Law are deduced from the practice of States, and in this matter practice has not been quite uniform or consistent. Considerations connected with piracy have been allowed to intrude into the question and darken its solution. But recent cases show a tendency towards the adoption of rules and principles which only require to be clearly stated and divested of extraneous matter in order to meet with general acceptance. A State cannot rid itself of responsibility for the acts of its rebel cruisers by proclaiming them pirates. Such a proclamation has no international validity. All it can do is to alter the *status* of the vessels according to the municipal law of the country to which they belong. Foreigners must regulate their conduct towards such vessels

¹ Diplomatic Corps to Senhor Pereira, October 6th, 1893.

² *Foreign Relations of the United States*, 1893.

without reference to a purely domestic question. If the ships in question attempt to establish blockades against neutral commerce, or bombard neutral property, or molest neutral vessels pursuing their lawful avocations on the high seas or in the territorial waters which are the scene of conflict, the injured neutral may proceed against them directly, and use what force is necessary to compel them to desist. It knows three things:—There is no war; its subjects have been treated as if there were war; those who have inflicted this treatment have no recognised Government behind them to be answerable for their misdeeds. Under such circumstances, it simply says to the parties concerned: "Fight out your own quarrel with your own countrymen. With that I have no concern. But, unless and until you receive recognition as lawful belligerents, I will not submit to the exercise of belligerent rights against my subjects or my sea-borne commerce." This is an intelligible rule. It rests upon admitted principles, and is a sure guide in practice. Moreover, it has the further advantage of avoiding all questions connected with piracy, and limiting the action of the aggrieved Power to what is necessary for the protection of its own interests. The injured neutral strikes directly at the offender, just as it does when the ship of a recognised belligerent attempts to make a capture in one of its ports. Force would be used then, though the peccant vessel would not be in the position of an unauthorised predator. Much more, therefore, may it be used against ships which bear the commission of no recognised authorities. But in neither case does the use of it imply a pronouncement upon technicalities connected with the exact position in International Law of the vessel attacked. If it be objected that there is no middle term between a belligerent and a pirate, and that a ship engaged in acts of depredation at sea must be the latter when it is not the former, I reply that the cases collected in this paper point to a condition midway between the two. If the rebel cruisers whose acts we have been discussing had been regarded as pirates *jure gentium*, the public vessels of all Powers who came in contact with them would have attacked them, and no ship of sufficient strength would have waited for depredations upon its country's commerce before making an attempt to capture. But in every case except that of the "Vigilante" at Cartagena, the interests of the attacking State had been injured before the attack was made by its cruisers. And in the case of the "Vigilante" the captured crew and passengers were set at liberty instead of being tried as pirates. In practice, then, a distinction is made; and surely it might with advantage be described in appropriate words and introduced into International Law. No better terms than "Insurgency" and "Recognition of Insurgency" can be found. They have been already suggested in the United States,¹ and I have no hesitation in repeating the suggestion here. Among the advantages to be gained by their general adoption, would be the removal of the difficulties connected with the recognition of the belligerency of a revolted squadron which had no land base of operations. It might be a most formidable force, and might carry on what could with difficulty be distinguished from a regular

¹ See article in the *Albany Law Journal* for February 13th, 1836.

war, and yet it would lack the fixed territory which is essential to belligerents before they can receive recognition. Neutral States might hesitate to brand such vessels as pirates; but there would be no difficulty in terming them insurgents and recognising their insurgency.

Vice-Admiral the Hon. Sir E. FREMANTLE, K.C.B., C.M.G. : I do not pretend to be able to discuss properly this very difficult and thorny question. The whole of the questions relating to international law, as is well known to this audience, are not only extremely intricate and doubtful, but they rest upon facts and customs, and these facts and customs do differ and have differed at various times. Attempts have been made by international lawyers to decide what are the most usual customs and those most in accordance with our modern civilisation; and undoubtedly in many respects there are usages which are generally called laws of war which receive almost universal application, especially amongst civilised States. Now, the question which has been dealt with principally by the lecturer is, as he is perfectly aware, a small part of this very large subject, but it is a very important part, an' one which we as naval officers have frequently to deal with; and I am quite sure that I feel myself that he has dealt with it with a very full knowledge and a much greater knowledge of international law than is generally possessed even by those whose duty it is occasionally to give official opinions on that important subject. That, at least, is the opinion which I have formed as a Commander-in-Chief, and I venture to say that I necessarily have some experience of international law, having myself been instrumental in declaring two blockades. This lecture does deal and touch upon the question of blockades, but I do not wish to go fully into it, as it is not the question to which the lecture is mainly devoted. I entirely agree with the views of the lecturer on the question of our action with regard to hostilities in the shape of civil war, and the distinction drawn by him between such insurgent ships and piracy, and I think he has put them extremely clearly before us. We have very often become somewhat mixed as to whether such ships are lawful and legal belligerents in cases in which they have not been declared to be so by a civilised Government. In some cases this has been done, as by our own Government in the case of the American Civil War; otherwise we are apt to say, "These are pirates." Yet when we attempt to deal with them as pirates, when we look upon them as pirates in every sense of the word, we see at once that they are not, and we are bound to deal with them differently. We are not told by our Government to have no dealings whatever with them. We have seen that even the mother-country, against which they are in rebellion, does treat them with some consideration, such as exchanging prisoners, and so on. Consequently we naturally get a little confused. We feel that they are not exactly pirates to whom no quarter is to be given; and we are told by our Government to wait and see what happens, and not to take any overt acts until we have to do so in defence of our countrymen—or similar instructions to that effect. The middle course, which has been put so well by the lecturer, I think is quite worthy of our consideration, and makes our instructions much clearer. I should like to impress rather more strongly than the lecturer has done, when we admit belligerency, the fact that the belligerent has not only the power to act as a belligerent, but to try neutrals if they are infringing blockade or anything of that sort, because it seems to have been admitted in the South American case referred to that it might be possible to allow a blockade even when belligerent rights have not been generally allowed, such blockade being restricted to preventing the ingress of contraband of war into any particular port. That, as I understand, the lecturer objects to, and I entirely agree with him. I rather take exception, however, to what the lecturer says at the beginning of his lecture :—"When war breaks out between two independent States, each acquires, as a matter of course, all the rights of a belligerent. Other States have nothing to do with giving or withholding these rights. They must respect them at the

risk of being treated as law-breakers." Perhaps I may be allowed to touch upon the war between China and Japan in illustration of this statement. Almost immediately upon war being declared, we made a declaration of neutrality. We said that we would allow belligerent rights to those two Powers, and that we would act as neutrals. I think that in that case we scarcely looked sufficiently into the question as to what are belligerent rights or what are the rights of neutrals. It has been held by international jurists that any vessel being captured is to be dealt with by proper prize courts. It has been held that a neutral vessel with contraband of war on board may be stopped, but the contraband of war cannot be taken out. The captor has no right to constitute himself the judge as to what is contraband of war, but is bound to take her into a port where there is a prize court, and where the question may be gone more or less fairly into in accordance with law. The captor must not take a ship and act according to his own views of what is right. In the case of the war between China and Japan one country had no prize court at all, and never had one. That was China. The Japanese had no prize court at the time when the declaration of neutrality was proclaimed; but they immediately rose to the occasion and constituted a prize court, and, I believe, an efficient one, at Sassebo. I do not think, however, that they quite understood the question, because they did capture one English ship towards the close of the war, and took her to Port Arthur, where there was no prize court. I immediately sent a ship to Port Arthur with my compliments to the admiral to tell him that he had no right to detain the ship there, and requested that he would send her to Sassebo, where there was a prize court. That was immediately done. The Chinese, on the other hand, having heard of an English ship which was laden with contraband of war, especially Whitehead torpedoes, bound for Japan, attempted to stop her in the Formosa Channel. But they got hold of the wrong ship and captured a vessel called the "Pathan," and took her over to Formosa to Kelung. At Kelung there was nobody but an extremely ignorant mandarin, though our consul went from Tamsui, and there was a good deal of what we should call "fooling around." They cleared the hold of the ship and did many very irregular things, giving a great deal of trouble. When this came to my knowledge I proposed to send a ship over and tell them that this would not do, and that they must send the vessel straight to Shanghai, where the matter could be settled by our Minister in communication with the Chinese authorities. I did send a ship there, and this was done after the ship had been detained some time. I venture to think that we were a little hasty in allowing these people belligerent rights. We should have said to them, "We do not think we can allow belligerent rights at all, unless you can establish something in the nature of prize courts." In that way we neutrals, if we are neutrals, might bring some pressure upon belligerents to act in accordance with what is understood to be international law. I may mention with regard to the "Pathan" that she had on board a few toy pistols, and a question which eventually gave rise to some difficulty was whether those toy pistols were sufficient to justify her detention as carrying contraband of war. In conclusion, I venture to express my thanks to the lecturer for having brought a subject of so great importance to naval officers before us; because so far as my experience goes, although the writers on the subject are very voluminous, and many of them are very clear, at the same time they refer us to a great many cases—cases, no doubt, of great interest—but there are "ifs" and "buts," which, though I dare say they are quite intelligible to lawyers, are not always equally clear to the naval officer. It is necessary and right that the naval officer should have a pretty clear idea in his mind of what international law consists, and he will then be better prepared to appreciate the arguments of Hall, Phillimore, Wharton, Hallett, or any other of the recognised authorities whose books are provided by the Admiralty for the naval officer's use. Having a clear idea in his mind, the naval officer will be more fully prepared to go into details.

Vice-Admiral P. H. COLOMB: I only rise because I think so very important and

useful a paper as this should not leave our theatre without being discussed, even inadequately. I have been much interested in the lecture, and I have felt strongly how important it is that it should be circulated through the Navy in our JOURNAL. I was struck with the difference between the general title and the actual matter of the lecture. The general title takes a very wide field, but the bulk matter is narrow, and, to my mind, new. It chiefly deals with the question of revolted ships and fleets, and it seems to me that that is a sort of thing we are likely to have constantly going on, and a matter that our naval officers will be closely mixed up with, and may have to decide—if one may say so—off their own bats at any moment. I cannot help rejoicing at the lucidity and clearness with which their duties are set forth by the lecturer. I think we must all have felt that. If I were actively employed I could go away on board my ship with this paper feeling very safe indeed as to what would be the proper course for me to pursue in cases of this kind. I never myself had much to do with questions of international law, as dealing with the status of ships, but I have had rough and ready work where international law did not much come in. I remember one occasion in the Persian Gulf. I arrived at Muscat with strict orders not to use force on any account whatever, unless I had direct instructions from the Viceroy. I found a small fleet of brigs and corvettes about to start—I think two days later—to make war on the other side of the Persian Gulf, where there was a great deal of British property and many British subjects. The question was, what to do with them. I recollect that we solved it in a very rough and ready manner. I sent a message to the Sultan to say that if he did not disarm and dismantle the ships immediately, I should be under the painful necessity of capturing the squadron. The terms of my message were complied with. I am not quite sure whether there was any international difficulty about it. It was an easy piece of business. I really only rose to express my extreme pleasure at listening to the paper, and to give my opinion that this will be for years to come one of the most useful manuals on questions which are likely to occur between naval officers and revolted ships.

The Rev. T. J. LAWRENCE, in reply, said:—I have, Mr. Chairman, very little to reply to. I must express my gratitude to the two speakers for the kind and friendly view they have taken of my paper. I may, perhaps, begin by saying a word or two as to what Vice-Admiral Colomb has been putting before us. The latter part of my paper dealt with the question of revolted ships whose belligerency had not been recognised, but the earlier part of it went into the more general question as to the recognition of belligerency and its relations to maritime warfare. I spent, however, my chief strength upon the latter part, for the reason—as Vice-Admiral Colomb so pleasantly put it—that this seemed to me to be a more or less new point. Instances in which questions of international law have had to be dealt with have cropped up pretty frequently of late. In fact, in the somewhat volcanic and revolutionary Republics of South and Central America it seems to be a holiday pastime for sections of the fleet to revolt; and then it is necessary for British commanders to know what to do. Rear-Admiral de Horsey, confronted by a case of that kind, went into a somewhat technical argument as to whether the vessel in question was a pirate or not. I imagine he was absolutely right in what he did to the "Huascar"; but he need not have troubled his head as to whether the vessel was or was not a pirate. She was an unauthorised rover of the seas depredating upon British ships, and his duty as a British admiral was to stop that depredation, seeing that there was no recognised state of warfare to give her any right to do as she did. Then comes the question whether you are to treat such vessels entirely as pirates. Technically, I think, the "Huascar" was a pirate; but I also think that there ought to be a distinction drawn in law between such vessels and regular, common, vulgar pirates. A distinction is drawn in practice—as in the instances I have quoted in my paper—and certainly a distinction ought to be drawn in theory. Then we come to the numerous questions connected with

blockade and contraband. It is a curious thing that Great Britain, who took a strong stand in the Chilian case, weakened on the one question of contraband, and was prepared to admit the right of the revolted Chilian squadron to take British vessels laden with contraband goods. The United States, taking a strong stand in the Brazilian case, weakened on the subject of blockade, and was prepared to admit the validity of an efficient blockade maintained by the insurgents. But it seems to me that neither was properly allowable. If there was no war, there was no right on the part of the parties to the struggle to take contraband goods or to establish blockades against neutral vessels. Vice-Admiral Fremantle has raised the very difficult and interesting point, as to what is to be done when war breaks out between two States that are technically members of the family of nations, States with whom you hold diplomatic relations, but which, nevertheless, are not civilised after our Western model, and which cannot be trusted to carry on war according to our Western nations. The statement I made at the beginning of my paper that, "When war breaks out between two independent States, each acquires, as a matter of course, all the rights of a belligerent," is a common-place of international law as applied to the ordinary civilised States who have made international law what it is. But if you take an exceptional case, such as China and Japan, undoubtedly you experience a difficulty. My way out of the difficulty would be this: to say to them, "You are members of the family of nations; you come under international law; and we, therefore, recognise you as belligerents, and impose upon yourselves the disabilities of neutrals; but we shall keep a sharp look-out upon you; and if you do not behave towards us as civilised belligerents are accustomed to behave towards neutrals, we shall insist upon full reparation and compensation for any of your misdoings in this respect." That seems to me to be the preferable way of dealing with such people. I have only now to express my thanks to you, gentlemen, for the patience with which you have listened to me, and to the speakers for the kindness with which they have spoken of my paper.

The CHAIRMAN (Sir Frederick Pollock): We shall all agree, I think, as to the great profit to be derived from Mr. Lawrence's paper. He has done very well, if I may say so, to call attention to the facts which really underlie all the technical discussions on these questions of belligerency, neutrality, and recognition. Since the days of the American Civil War we have got beyond the stage of thinking that these matters can be settled by deduction from the books of eighteenth century writers, who had not any such facts present to their minds. Mr. Lawrence seems to be quite right in pointing out that you cannot divide mankind off-hand into those who are at peace, those who are belligerents for all purposes, and those who are mere pirates. It seems to me that there really are two degrees of belligerency. The first is one which affects only the combatants, and in that sense everyone may be called a belligerent who acts in an organised and disciplined manner, observing the laws and usages of civilised warfare, and in return expects and obtains the benefits of those laws and usages. I do not see myself how the benefit of the laws and usages of war can in modern times be refused to any organised body of men acting under proper discipline, either by land or sea, and themselves observing the same rules and not committing depredation on society at large. I do not know of any modern instance of people who carried on hostilities under discipline and in a civilised manner being treated for any length of time as mere brigands. Thus, in the American Civil War the Southern commanders, with very few, if any, exceptions, were treated as honourable enemies from the first, though different language was held for some time by persons who had not the practical responsibility. I am not speaking now of the penalties which unsuccessful rebels may incur under the ordinary laws of their country. They are liable to penalties as traitors or rebels or rioters—not as brigands or pirates. The case of the Indian Mutiny does not form any real exception to the rule I have

useful a paper as this should not leave our theatre without being discussed, even inadequately. I have been much interested in the lecture, and I have felt strongly how important it is that it should be circulated through the Navy in our JOURNAL. I was struck with the difference between the general title and the actual matter of the lecture. The general title takes a very wide field, but the bulk matter is narrow, and, to my mind, new. It chiefly deals with the question of revolted ships and fleets, and it seems to me that that is a sort of thing we are likely to have constantly going on, and a matter that our naval officers will be closely mixed up with, and may have to decide—if one may say so—off their own bats at any moment. I cannot help rejoicing at the lucidity and clearness with which their duties are set forth by the lecturer. I think we must all have felt that. If I were actively employed I could go away on board my ship with this paper feeling very safe indeed as to what would be the proper course for me to pursue in cases of this kind. I never myself had much to do with questions of international law, as dealing with the status of ships, but I have had rough and ready work where international law did not much come in. I remember one occasion in the Persian Gulf. I arrived at Muscat with strict orders not to use force on any account whatever, unless I had direct instructions from the Viceroy. I found a small fleet of brigs and corvettes about to start—I think two days later—to make war on the other side of the Persian Gulf, where there was a great deal of British property and many British subjects. The question was, what to do with them. I recollect that we solved it in a very rough and ready manner. I sent a message to the Sultan to say that if he did not disarm and dismantle the ships immediately, I should be under the painful necessity of capturing the squadron. The terms of my message were complied with. I am not quite sure whether there was any international difficulty about it. It was an easy piece of business. I really only rose to express my extreme pleasure at listening to the paper, and to give my opinion that this will be for years to come one of the most useful manuals on questions which are likely to occur between naval officers and revolted ships.

The Rev. T. J. LAWRENCE, in reply, said:—I have, Mr. Chairman, very little to reply to. I must express my gratitude to the two speakers for the kind and friendly view they have taken of my paper. I may, perhaps, begin by saying a word or two as to what Vice-Admiral Colomb has been putting before us. The latter part of my paper dealt with the question of revolted ships whose belligerency had not been recognised, but the earlier part of it went into the more general question as to the recognition of belligerency and its relations to maritime warfare. I spent, however, my chief strength upon the latter part, for the reason—as Vice-Admiral Colomb so pleasantly put it—that this seemed to me to be a more or less new point. Instances in which questions of international law have had to be dealt with have cropped up pretty frequently of late. In fact, in the somewhat volcanic and revolutionary Republics of South and Central America it seems to be a holiday pastime for sections of the fleet to revolt; and then it is necessary for British commanders to know what to do. Rear-Admiral de Horsey, confronted by a case of that kind, went into a somewhat technical argument as to whether the vessel in question was a pirate or not. I imagine he was absolutely right in what he did to the “Huascar”; but he need not have troubled his head as to whether the vessel was or was not a pirate. She was an unauthorised rover of the seas depredating upon British ships, and his duty as a British admiral was to stop that depredation, seeing that there was no recognised state of warfare to give her any right to do as she did. Then comes the question whether you are to treat such vessels entirely as pirates. Technically, I think, the “Huascar” was a pirate; but I also think that there ought to be a distinction drawn in law between such vessels and regular, common, vulgar pirates. A distinction is drawn in practice—as in the instances I have quoted in my paper—and certainly a distinction ought to be drawn in theory. Then we come to the numerous questions connected with

blockade and contraband. It is a curious thing that Great Britain, who took a strong stand in the Chilian case, weakened on the one question of contraband, and was prepared to admit the right of the revolted Chilian squadron to take British vessels laden with contraband goods. The United States, taking a strong stand in the Brazilian case, weakened on the subject of blockade, and was prepared to admit the validity of an efficient blockade maintained by the insurgents. But it seems to me that neither was properly allowable. If there was no war, there was no right on the part of the parties to the struggle to take contraband goods or to establish blockades against neutral vessels. Vice-Admiral Fremantle has raised the very difficult and interesting point, as to what is to be done when war breaks out between two States that are technically members of the family of nations, States with whom you hold diplomatic relations, but which, nevertheless, are not civilised after our Western model, and which cannot be trusted to carry on war according to our Western nations. The statement I made at the beginning of my paper that, "When war breaks out between two independent States, each acquires, as a matter of course, all the rights of a belligerent," is a common-place of international law as applied to the ordinary civilised States who have made international law what it is. But if you take an exceptional case, such as China and Japan, undoubtedly you experience a difficulty. My way out of the difficulty would be this: to say to them, "You are members of the family of nations; you come under international law; and we, therefore, recognise you as belligerents, and impose upon ourselves the disabilities of neutrals; but we shall keep a sharp look-out upon you; and if you do not behave towards us as civilised belligerents are accustomed to behave towards neutrals, we shall insist upon full reparation and compensation for any of your misdoings in this respect." That seems to me to be the preferable way of dealing with such people. I have only now to express my thanks to you, gentlemen, for the patience with which you have listened to me, and to the speakers for the kindness with which they have spoken of my paper.

The CHAIRMAN (Sir Frederick Pollock): We shall all agree, I think, as to the great profit to be derived from Mr. Lawrence's paper. He has done very well, if I may say so, to call attention to the facts which really underlie all the technical discussions on these questions of belligerency, neutrality, and recognition. Since the days of the American Civil War we have got beyond the stage of thinking that these matters can be settled by deduction from the books of eighteenth century writers, who had not any such facts present to their minds. Mr. Lawrence seems to be quite right in pointing out that you cannot divide mankind off-hand into those who are at peace, those who are belligerents for all purposes, and those who are mere pirates. It seems to me that there really are two degrees of belligerency. The first is one which affects only the combatants, and in that sense everyone may be called a belligerent who acts in an organised and disciplined manner, observing the laws and usages of civilised warfare, and in return expects and obtains the benefits of those laws and usages. I do not see myself how the benefit of the laws and usages of war can in modern times be refused to any organised body of men acting under proper discipline, either by land or sea, and themselves observing the same rules and not committing depredation on society at large. I do not know of any modern instance of people who carried on hostilities under discipline and in a civilised manner being treated for any length of time as mere brigands. Thus, in the American Civil War the Southern commanders, with very few, if any, exceptions, were treated as honourable enemies from the first, though different language was held for some time by persons who had not the practical responsibility. I am not speaking now of the penalties which unsuccessful rebels may incur under the ordinary laws of their country. They are liable to penalties as traitors or rebels or rioters—not as brigands or pirates. The case of the Indian Mutiny does not form any real exception to the rule I have

stated, as the mutineers, besides never having a single or settled Government, notoriously did not observe the laws or usages of civilised warfare ; and therefore, even if they had satisfied the condition of continuous territorial occupation of a definite part of India, would still not be entitled to any kind of recognition as belligerents. Then there is the full recognition of belligerency, which consists in neutral States allowing the belligerents to exercise the rights of search, blockade, and so forth, as against neutrals. That is a different matter, and those rights, I take it, are conceded by neutrals very much from the point of view of what it is their own interest to do. Practically it depends upon the new belligerent being strong enough to hold out a fair prospect of unpleasant consequences, on the one hand, to Powers not conceding his belligerent rights ; and on the other hand, of being able to pay damages if any just claims arise out of the exercise of those rights. Whether a given belligerent has established that position, is a pure question of fact. It may be, no doubt, that executive officers of neutral countries, especially naval officers, have to decide that question on their own responsibility. Such responsibilities must be dealt with according to individual judgment and ability, with regard to the facts of each case, and cannot be removed by any amount of learned discussion. A speculative question may, I think, be raised whether it would not be possible in exceptional circumstances for full belligerency to exist without any territorial base of operations. Such things were known, for instance, among the small Greek Republics, as a State migrating bodily to settle in a new country. It seems conceivable that a revolted fleet might have such an amount of internal stability, and such a prospect of acquiring territorial jurisdiction, though it had not any at the time, that it might be entitled whilst on passage in search of a new resting place to have the right of a *de facto* Government. For instance, if the Mutiny at the Nore had had a different issue, and a considerable portion of the British fleet had sailed westward with the intention, say, of occupying the Bermudas and setting up an independent Republic, that portion would have been both strong enough and disciplined enough to be something quite different from pirates or rovers ; at all events at that time the very learned and ingenious persons who advised the French Government would probably not have failed to find reasons for recognising them. One might suppose again that in 1849 the Republic of Venice had had sufficient naval force to go to sea bodily, leaving Venice for the time in possession of the Austrians, but with a fair prospect of recapturing it. And if the Republic of Venice had transferred its archives to a sea-going fleet and cruised about the Adriatic, I do not know why any Power favourably disposed might not have recognised it as a *de facto* Government. These, however, are remote questions, which posterity may deal with if ever they arise. I am sure you will all agree with me that the profitable discussion, which may arise on further consideration of Mr. Lawrence's instructive essay, has by no means been exhausted on this occasion.

THE EVOLUTION OF THE MILITIA AS THE BASIS OF THE ARMY.

By Major A. B. WILLIAMS, 7th Battalion, The Rifle Brigade.

Friday, June 26th, 1896.

Colonel J. DAVIS, F.S.A., 3rd Batt. The Queen's (Royal West Surrey) Regiment, *Aide-de-Camp to the Queen*, in the Chair.

IN order fully to appreciate the antiquity of the Militia, it is necessary to go far back into the history of England, for it is in the earlier pages of that history that we first recognise the existence of those principles of national defence from which have been evolved, not only the Militia, but also the whole British Army. It will be useful, therefore, to give in brief and consecutive form a sketch of the history of the Militia, with a view to following its evolution from the small beginnings of 1,000 years ago to its position in the British Army at the present time. It is obvious that no claim to originality can be made for this historical sketch, which is derived from well-known sources, though probably the information may not have been before presented in this form to the public, to whom it may be useful in removing much want of knowledge or misapprehension as to the old Constitutional Force.

From the earliest times there appears to have been a sound, common-sense acceptance of the axiom that it is the duty of every able-bodied man to bear his part in the defence of his country. This had its origin first, probably, in the family or clan—to employ the Celtic word—further developing as the country emerged from its primitive state, until it extended to territorial limits, which we now recognise in the county, and from these expanding into national or insular defence, in future years to include those immense Imperial interests which now so deservedly attract widespread attention. Throughout all this process of evolution the one guiding principle has been present, though at times it may have been clouded or distorted by the ambition of monarchs, influenced at different periods by motives of patriotism or personal ambition. It is generally understood that to King Alfred belongs the honour, among other things, of consolidating the defensive Land Forces of England, as well as that of forming a Royal Navy; indeed, Hume in his history expressly states that Alfred "established a Regular Militia for the defence of the Kingdom"; but whether this is so or not, it is quite certain that prior to the Norman Conquest the General Levy was an established national institution. This Levy was based on the law that

every man between the ages of fifteen or sixteen and sixty, capable of bearing arms, was bound at his own expense to provide arms and appear to fight in his country against both domestic and foreign foes; in other words, to aid in suppressing riots as well as in defending the realm against invasion—an obligation which survives to the present day in the case of the Militia. This General Levy therefore had a double aspect. As a civil force it was known as the *posse comitatus*, which the sheriff was entitled to call on to arrest criminals and suppress riots. In its other aspect it was a military force, and was called out under the sheriff, or some other officer of the Crown (for lieutenants of counties were not appointed until the reign of Edward VI.), to defend the realm in civil war or against foreign foes.

As to the military training of the General Levy, there is little or no information. Certain officials were appointed to enforce the obligation to serve and to provide arms, and twice every year these officials inspected the arms provided, such inspections being called "Views of Armour." Writs were often issued by the King to the sheriffs and others to array or summon before them the men liable to service, and to punish defaulters, and this we may regard as the origin of the annual training as we now know it.

With the rise of the feudal system in England, the Feudal Levy came into existence. As to the date of this there is a difference of opinion, but whatever may have been its beginnings it did not assume definite shape until after the Norman Conquest. The distinction between these two levies is important, for while the obligation to serve in the General Levy rested on every man as a citizen, obligation to serve in the Feudal Levy depended on homage or tenure under the King as Feudal Lord. The General Levy probably constituted the larger part of the infantry, while the Feudal Levy consisted of the knights, who, on horseback, and in coat of mail, formed the most prominent feature of warfare in the Middle-Ages. Under the feudal system holders of land by the tenure of knight service were bound to attend the King at their own expense, mounted and armed, with their retainers. The period of such attendance was for forty days annually, and as early as the year 1159 there are entries in the Exchequer records of "Scutage" or "Shield Money" being paid as fines for exemption from this service. Both the Feudal Levy and the "Scutage" were discontinued during the Commonwealth, and were finally extinguished on the Restoration in 1660.

In reviewing the history of the Feudal Levy, it is not, perhaps, too great a stretch of imagination to recognise the principle of its existence as surviving still, to some extent at least, in the case of the Yeomanry, just as the General Levy still lives in the modern form of the Militia. It is also interesting to notice that closely connected with the General Levy was the Crown's prerogative of purveyance, which enabled the Crown to enforce the supply of carriages, carpenters, smiths, and other artificers, as well as of victuals, for military purposes. Perhaps the most noteworthy instance of the exercise of this prerogative is that of King Edward III., who employed it for the building of Windsor Castle—a noble structure, upon which the

Militia of the present day may look with pride as the work of their remote predecessors.

But although, as we have seen, personal service formed the basis alike of the Feudal and General Levies, yet there were not only many people who could not serve, but also, at times, it was not desirable to call out every available man as allowed by law, so service by deputy, or payment, in lieu of personal service, and the calling out of a quota only (which to this day continues as an important provision in connection with the ballot for the Militia), were accordingly allowed from very early times. "Scutage" or "Shield Money" was the tax which, as above referred to, those liable to serve in the Feudal Levy had to pay to secure exemption from personal service. In the case of the General Levy, however, the practice was to call on a certain quota only from each county to serve in person, and of requiring those not so called on to supply with arms and victuals, and to defray the expenses of those who served in person. This developed into a sort of tax on the county or township, and continued, until very recently, in the form of a liability on the part of the county to pay a portion of the expenses of the Militia; a very interesting and important fact, showing that the Militia is lineally descended from the General Levy—the original Army of England.

It is also interesting to note, as bearing on the early recognition of the value of the Militia as the proper basis for a regular or foreign Army, that the "Commissions of Array," as they were known in the reign of Edward I., sometimes directed the Commissioners to "elect" a number of men, that is, virtually to press them to join the Army for general service. This impressment, however, led to serious abuses and disputes, until the question of service out of England was regulated, as early as the year 1327, by a series of Acts of Parliament, which provided for the proper payment by the Crown of men chosen for foreign service. Before leaving this part of the subject, however, it is desirable to refer to those men who received pay for their services, and who were known as "Mercenaries," or "Stipendiaries," and who, from an early period, were regarded as professional soldiers who served solely for pay. It is recorded that these paid troops date from the time of the Conquest, but it is interesting to note that they were often obtained from the Feudal and General Levies, forming another instance of the value set even in those days on the Constitutional Force as a ready means for providing soldiers for foreign service. Thus far, therefore, we have had a glimpse of the old Constitutional Force as it existed up to about the middle of the XIVth century, mainly a domestic Army, but, like its lineal descendant, the Militia of to-day, a highly useful body, ready for any emergency, possessing most convenient elasticity, and displaying military qualities which laid the foundations of the British Empire.

It was in the reign of Edward III. that England may be said to have first embarked on a spirited foreign policy, which led to those campaigns in which the famous battles of Crécy and Poitiers stand out as brilliant incidents in our military annals. History records with scant detail the formation of the Armies which added those first battle honours to a long

roll of fame. We can, however, easily imagine the employment of the machinery connected with the calling-out of the levies for raising an Army for foreign service; and the utilisation of the arms primarily intended for home defence. Then the enrolment of men for the French campaign with the result, we are told, that for the Crécy campaign the Army consisted of 4,000 men-at-arms, 10,000 Welsh Infantry, 10,000 archers, and 6,000 Irish, an Army practically of Militiamen, who covered themselves with undying glory. At Poitiers, the Black Prince commanded an Army of which only about one-third were Englishmen, but that third were probably those same sturdy Militiamen whose cloth-yard shafts wrought havoc among the French troops. About fifty years afterwards Agincourt was fought, when the Army which Henry V. commanded consisted of 6,000 men-at-arms, drawn from the Feudal Levy, and 24,000 foot, mostly archers, drawn principally from the General Levy; and again with swelling hearts we read of the stirring incidents of that battle, fought and won by those we proudly recognise as Militiamen.

It is unnecessary, as being immaterial to our subject, to do more than refer briefly to the raising of troops by indenture, which, after the beginning of the reign of Henry V., became the commonest method for raising the forces of the Crown for foreign service. This was the natural consequence of restrictions imposed by Parliament on the Crown's predilection for utilising the Constitutional Forces for service abroad. We therefore hear but little of the Feudal or General Levies for many years until we come upon them in the XVIIth century in more recognisable form as trained bands and Militia. Although the word "Militia" first came into general use in the time of Charles I., yet it seems to have been used as early as the year 1590, and, as almost everyone knows, from the time of the Restoration in 1660, when the Standing Army came into existence, and the whole military forces were re-organised, the Militia assumed a definite position in the national defences by direct descent from the General Levy. The Feudal Levy was at that time finally abolished, but the obligation to serve in the General Levy was never extinguished, and remains to the present day, not only in constitutional theory, but also in statutory and practical form of liability to serve in both the general and local Militia. Thus there can be no doubt as to the antiquity of the Militia, which, as a Force, has had a continuous existence for one thousand years. It is difficult, therefore, to understand upon what grounds of reasoning or argument it has been compelled to surrender its seniority to the Honourable Artillery Company, which ancient and honourable as it undoubtedly is, was formed as a voluntary association long after the establishment of the Militia. No mere technicalities as to the continuity of individual units, or the accidental survival or loss of partial historical records, should be permitted to outweigh the evidence of the whole range of national history, which testifies beyond a doubt to the existence in fact as well as in principle of the Militia for centuries before the formation of any voluntary association.

After the critical period of the reign of Charles I. and the wholly abnormal condition of the Kingdom during the great civil war, military

matters settled down at the Restoration, and the Militia came in for a large share of Parliamentary notice. Acts were passed legalising the training of the "Militia and Land Forces" (the use of the two terms in this manner is remarkable), and subsequently (in 1662) for "ordering the forces in the several counties in the Kingdom," whilst in the following year an Act was passed by which the Militia was definitely organised and the trained bands discontinued. In 1690, the Force was called out to resist the French invasion; and again in 1715 and 1745, when the elder and younger Pretenders attempted to restore the fallen fortunes of the Stuarts.

It is unnecessary to follow the ups and downs of the Militia during the XVIIIth century. At one time the Force appeared to have fallen into a bad state, and there was great difficulty in obtaining officers; but the law was enforced, and matters were so satisfactorily arranged, that in 1759 there was another embodiment. In 1761, and again in 1786, the Acts relating to the Militia were consolidated, and it is satisfactory to learn that in the preamble to the consolidating Act the utility of the Force was emphatically recognised by Parliament.

And now it is desirable to call attention to the remarkable fact that in 1802 the policy, discontinued in the reign of Edward III., was revived, of encouraging enlistment from the Militia to the Regular Army in time of war. As to the soundness of that policy there can be no doubt, and it is in its continuance and extension that the country may hope to find the best means for securing the services of a really efficient Army. When in the early years of the present century the terrible drain occasioned by the prolonged war with France was keenly felt, the Militia nobly bore its share of the fighting by sending thousands of its men to the Peninsula. At Waterloo the Militia was well and worthily represented by hundreds of men who hurried to the front, many of them wearing their Militia uniforms, and helped to win for distinguished Regular regiments the highest honours of which they are justly proud. After a lapse of forty years the Crimean campaign roused the Force from a state of ignoble lethargy not of its own seeking, and in addition to valuable services in Home and Mediterranean garrisons, many a sturdy Militiaman found death or glory at the Alma, at Balaklava, in the soldier's battle of Inkerman, or in the deadly trenches before Sebastopol. In swift succession the crisis occasioned by the Indian Mutiny found it again ready to supplement the Regular Army with yet another embodiment, and so on down to the present day it has been closing up nearer and nearer to the first line, being largely represented by both officers and men in every recent campaign and battle, ever eager and ready to fill up the gaps occasioned by the emergency of the moment or the waste of war.

And now its evolution seems to be checked. It is true that it continues to exist with many expressions of official favour, though the Force still lacks many things which might justly be conceded as material marks of national appreciation, but by many it is regarded as an anachronism, a mere relic of a bygone day, of questionable utility, so much so, indeed, that nothing less than its total abolition would satisfy the

destructive ideas of these so-called military reformers. Its honours and rewards, but not its responsibilities, are coveted by those who openly advocate their transference to another branch of the Service, which exists not upon the firm basis of constitutional principles as established by legal enactment, but rather upon the evanescent goodwill of the multitude. In view of these repeated assaults upon the Militia, it is time that its friends rallied to its succour, lest the radical tendencies of the day should tear it away, and leave England poorer indeed, and dangerously defenceless if deprived of her Constitutional Forces. But so little are its services appreciated by the nation, that the Force remains without a full dress or a proper equipment, and yet it is supposed to attract recruits to the Regular Army. Increased and increasing demands of military efficiency have to be met in the narrow limits of a training insufficient for more than elementary instruction, whilst the requirements of musketry suffer owing to the detrimental hurry inseparable from a system which so evidently disregards the dictates of common sense. At many periods during its history it gave high promise of a better future, but from various causes its just aspirations have been thwarted or diverted into other channels.

And now, as has been said a moment ago, its evolution seems to be checked. It has many useful qualities, but it appears as if one only, that of supplying recruits to the Regular Army, is valued at the present time, whereas it may be developed into far greater means of usefulness. There is danger lest it should degenerate into a mere recruiting agency, and by that means lose its strong individuality as the Constitutional Force, the legitimate Home Army of the United Kingdom, and the true basis of our whole military system. It has still a vigorous existence, and presents possibilities of development unrecognised by those who have little or no knowledge of its constitution, but in the following paragraphs an attempt will be made to unfold a scheme whereby its evolution may be further encouraged to the fulfilment of its natural destiny in relation to the British Army.

To those who have given a thoughtful consideration to the subject it will be evident that the time is most opportune for advancing the claims of the Militia to be permitted to help in meeting the increasing needs and responsibilities of the Army. It is generally allowed that in order to carry out a proper system of foreign reliefs the number of Regular battalions should be increased. The dépôt system is said to be not wholly satisfactory, whilst as to the methods for raising to full strength battalions for foreign service, no stronger condemnation of the present system has been uttered than that conveyed in the words of the Secretary of State for War himself. In introducing to the House of Lords a Bill to amend the Reserve Forces Act of 1882, Lord Lansdowne thus described the usual plan, which he characterised as a most profligate way of strengthening weak home battalions :—" It meant that, in order to strengthen one battalion which was already weak, they weakened another weak battalion, which in its turn was to be strengthened from another weak battalion, so that the process of weakening one battalion in order to

help another went on in an ever-widening rate and with ever-increasing bad results."

Again, on a subsequent occasion, Lord Lansdowne said in reference to the same subject :—" The needs of the Empire have grown ; military liabilities, at first regarded as only temporary, have lasted longer than was expected, and in order to meet them the balance between the home and the foreign portion of the Army has been again and again disturbed. This is no doubt a material departure from the intention of the framers of the present organisation, and the matter is one which has for some time past been seriously engaging the attention of the War Department. The inequality has been, to some extent, reduced, but it is still, in our opinion, greater than is consistent with the satisfactory working of our Army system, and your lordships may depend upon the question of it receiving the attention which it deserves."

But the most remarkable thing is that no one seems to have thought of the Militia as a ready and constitutional means for remedying this unsatisfactory state of affairs.' Indeed, the Militia is made use of only as a means for further complicating the system, for while one weak Regular battalion has to weaken itself to feed its sister, the unfortunate Militia has to starve itself to feed both. Now, with improved organisation these anomalies can be easily removed, and if, instead of the present round-about way of drafting and recruiting, we could arrive at a settled direct system for maintaining the Regular Army at proper strength, then, indeed, it will be conceded that a most desirable reform has been effected. This the Militia can do if a serious attempt be made to utilise it fully in the direction indicated in the following proposals. It is necessary to call to remembrance the fact that the Militia is really the basis of the territorial system, for from its initiation it was, as it ever has been, a territorial Force, and, indeed, many of the most honoured territorial titles in the Army are those which for many years had been exclusively enjoyed by the Militia. The greatest scheme of re-organisation which the Army has seen in recent years owes its success almost entirely to the Militia, and it is to the Militia we must again look for any further development of the Forces if based on those territorial principles, which, when fully carried out, offer the best guarantee for raising and maintaining an efficient Army. But we must ensure that our foundation is sound and solid, and that in appearance it is inviting, and (must it be said ?) respectable. If we make it, as it should be, the entrance to a military career, we must be careful that it represents the Army in the brightest colours of an attractive picture.

Before going into details, however, it is desirable to glance at the present position of the Auxiliary Forces, as they are known, and to touch on some suggested reforms made respecting them. During the last five-and-twenty years very remarkable changes have taken place in the state of both the Militia and the Volunteers. Everyone now recognises their relative values in our national defences, and an almost incessant appeal goes forth on behalf of both branches of the Service for means and opportunities to develop greater usefulness, and to justify more fully their claims to be regarded as reliable factors in the Army.

Foremost amongst the schemes for reform, that advocated by the *Broad Arrow* for transforming the Volunteers into local Militia holds a prominent place. This idea has been in effect supported by Colonel Brookfield, M.P., who has supplemented it by a suggestion to make room for a reformed Volunteer force, by levelling-up the Militia more closely to the Regulars. Confronted by these proposals, and whilst the question of reform in any branch of the Service is being discussed, it would be most useful if, by means of a Royal Commission, inquiry were made as to the relations existing between the Regulars and the Militia, and whether the latter Force is not capable of considerable improvement and extension, especially in the direction of reviving the local Militia as an adjunct to the general Militia. According to Colonel Brookfield, he would find a more suitable place in our military system for the Volunteers by forming them into a new force of Militia, local or otherwise, and by associating the present Militia more closely with the Regulars, calling them and making them a real Reserve. This latter proposal is to be commended, for there can be no question that the Militia forces have been steadily improving for many years, and have fully justified previous attempts to level them up. This process, therefore, need occasion no violent commotion; on the contrary, it should be regarded (as the title of this paper suggests) as an evolution, and not as a new creation.

A moment's thought will show the reasonableness of this view. The Militia is now the great feeder of the Regular Service. Recruiting for the Army is largely dependent on the Militia. Adjutants of Militia are recruiting officers, and the Permanent Staff are recruiters. A large number of Militia officers develop into Regulars, and an equally considerable number are more or less constantly serving at dépôts, assisting in the training of recruits, and in other duties on behalf of their territorial regiments. Thus it is obvious that but a narrow line separates the Militia from the Regular Service. History, already referred to, shows that when emergencies arose, as in the Peninsula, at Waterloo, and during the Crimean war, all petty differences vanished, and the common danger united in one grand patriotic effort all those, whether Regulars or Militia, whose training entitled them to wear the uniform of the Army, and to rally beneath the national flag.

The mention of dépôts, however, recalls the fact that not long ago a newspaper discussion took place on this subject. It has been said that the present dépôt system is complicated and expensive and not so useful as it should be; but assuming that the machinery at regimental dépôts does not develop the energy or give the results which may be expected of it, then the proposal here made for levelling-up the Militia into second or dépôt battalions will satisfy every possible objection to the present system.

But a word may be said as to the present Army Reserve. It has frequently been urged, and certainly with some justice, that the present system is not conducive to maintaining the efficiency of the Reservists as soldiers. Suggestions have been made that Reservists should be permitted if not required, to serve the annual training with one of the Militia

battalions of their territorial regiments. Amongst the proposals herein advocated is one that all Reserve men should, on completion of their service with the colours, be passed into the Militia for a term of years, and finally into a national Reserve. That which is now known as the Regular Army should in future be called the "First Line," and the Militia with a stiffening of Regulars and Reservists would develop into the "Second Line," to back up the First, to keep it supplied with officers and men, and, on the principle of attack formations, to act as a support to the "Fighting Line," to be gradually absorbed thereinto, as the need increased. Thus the Militia might be made even more than a Reserve, and most certainly might be permitted to advance far ahead of the position implied by its mistaken nomenclature as an Auxiliary Force.

Thus the general levelling-up would force on a consideration of the details and defects of the whole territorial system, and any enquiry must result in a recognition of the necessity for certain modifications and readjustments in order to bring our land Forces up in some degree to the standard of the best European Armies. Austria not long ago levelled-up her Militia into her first line, and thus by one stroke increased the effective strength of her Army by one-half. More recently, Italy has placed her Militia on a more solid basis; and Germany and France long ago based their military systems on the principle of the nation in arms, rightly despising the petty differences which would narrow military service to the few, choosing rather to foster the full development of national strength. Thus all around we see evolution and development while England stands still; so without further preface this scheme is launched, only asking the indulgence of a patient hearing, for only by considering its various proposals placed together as a whole, can a clear idea be formed of its object and intention.

In the *Broad Arrow* of the 1st of February last, in an article on the Militia, the following passage occurs:—"It would be an ideal organisation which could ensure that the majority of territorial recruits served first in the Militia, secondly in the Line, and lastly reverted to the Militia." Now there appears to be no real obstacle to this "ideal organisation" if we start with a conviction of the soundness of the Militia system, if properly carried out, as the basis of the whole Army. Why should not every recruit be enlisted first for the Militia? It is the constitutional principle, but if under voluntary enlistment it does not succeed, then the legal powers of the ballot can be brought to bear. It is only under such a system that we can ever hope to get a mature and seasoned Regular Army for foreign and colonial service. Every candidate for the Army, therefore, should enter the Militia, and after a season of probation for one, two, or three trainings, according to his age and state of efficiency, should then, with his own consent, be drafted into the Regular Army. Thus the Regular Army would never have in it either weakly men or immature lads, for the flow of recruits from the Militia would be restricted to the best and most suitable soldiers only.

But in order to make this system as direct as possible, each Regular battalion, instead of having to feed or be fed by another, should have

a Militia battalion as its 2nd Battalion, feeder, recruiter, and general supporter, the 3rd and 4th Battalions also sharing in the duty of providing recruits. Thus, of every territorial regiment, the 1st Battalion would be picked Regulars, the 2nd Battalion mainly Militia, the 3rd and 4th Battalions local Militia, with, where the population justified their formation, 5th and 6th Battalions of Volunteers. The completeness of this organisation will be apparent. The Militia, as the Constitutional Force, is the basis; from it springs the Regular Army with its greater responsibilities, and the local Militia with its lesser obligations. Each 1st Battalion is fed by its 2nd, but when in war or other emergency the 2nd Battalions are called up; then the duty of recruiting the two senior battalions falls upon the 3rd and 4th Battalions, each in turn assuming increased responsibility as the emergency demanded it.

A word of explanation, however, is necessary as to the two classes of Militia. No invidious distinction is intended. They are suggested as most likely to meet the convenience of the nation, in which some men can take upon themselves greater military responsibilities than others. The 2nd Battalions would be formed of men who were candidates for the Regulars, or who could attend a six weeks' training annually. (The training should be for six weeks, and all ranks liable for foreign service in emergencies.) The 3rd and 4th Battalions can be formed out of the Volunteers, of men who, in addition to a certain number of evening drills and passing in musketry, can come out for one or two weeks' training annually in field duties, with pay and allowances as soldiers. The Volunteer battalions should be restricted to those who wished to be exempted from Regular or Militia service, and who, like their predecessors of the early years of the movement, could pay their own expenses as all true Volunteers should.

A word of further explanation is necessary as to the Reserve. Every officer, within certain limits of age, according to rank, who retires from the Army with liability to further service, should be attached to the Militia, and should come out for the annual training. Every man should serve with the colours for seven years, then rejoin the 2nd Battalion for two years, so as to be immediately available for service, and after that (except he wished to stay on in the 2nd Battalion to complete five years in the Militia) he could be sent to the 3rd or 4th Battalion for three years, passing thence to the Army Reserve for three years, with Reserve pay and liability upon emergency to be called up to the 1st or 2nd Battalion, and finally to an unpaid Reserve for the Militia for five years. Thus the full term of service would be for twenty years, *i.e.*, seven years with the colours, five in the Militia, three in the Army Reserve, and five in the Reserve for the Militia.

Another important matter is the supply of officers. All officers, candidates for the Regulars, should first join the 2nd Battalion for a term of probation and instruction, passing on to the 1st Battalions under a competitive system. The Royal Military College, at Sandhurst, could be utilised for the special instruction during the non-training period of those young officers who were approved candidates for the Regulars.

The effect of this system would be that the officers of the 2nd Battalions would be mainly those who had retired from the Regulars, or those who were candidates for the Regulars. Thus many of those gentlemen who now join the Militia with no intention of going further, would find an outlet for their military zeal in the 3rd and 4th Battalions, which, under such greatly improved conditions, should suffer from no lack of officers.

And now let us consider how such a scheme of reform could be carried out. In the first place the old numerical regiments should be disentangled, giving them practically the word, "As you were." The question of territorial titles can remain for the present; they will form no obstacle, and can be dealt with by and by. Having for the purposes of this scheme of reform resumed the old order prior to 1870, then to each and every single Regular regiment (including the first twenty-five which have two fully-established battalions) should be given an establishment of twelve companies each, eight of which would go to form the 1st Battalion, and four to form a portion of the 2nd Battalion, and, in effect, the dépôt of the regiment as well. Now for the completion of the 2nd Battalion. It has already been said that four companies of Regulars would be allocated to this battalion. These would form the nucleus of the home-service battalion for the greater part of the year and should be located at the dépôt. At this point the Militia comes in, for each 2nd Battalion will be completed by the addition of six companies of Militia, so that all the 2nd Battalions would be training battalions, always at home (except during war or other emergency), with less than one-half Regulars and the remainder Militia, thus consolidating the various elements which now go to form the dépôt establishment into a much simpler and far less-expensive organisation. In this way the Militia can be levelled-up to form a valuable and yet economical part of the Regular Army, being dismissed to their homes for the greater part of the year at the end of the annual training, but ready to augment the Army to nearly double strength when needed. Thus all the 1st Battalions would be wholly Regulars, either on foreign service or waiting their turn on the roster, whilst the 2nd Battalions would be composite battalions of home-service troops, but ready to take their places in the first line when wanted.

But someone may question the possibility of carrying out foreign reliefs under this system. In the first place, as under this scheme there would be upwards of one hundred regiments, consisting of two battalions each, instead of as now only about half that number, it is evident that all 1st, or Regular, Battalions would be available for foreign service. It would obviously be unnecessary, except in emergencies, to have more than seventy-five battalions abroad at once, so that after all ordinary provision had been made, there would still be a wide margin for reliefs, and if a system of reliefs by half-battalions or companies were introduced it would conduce to great convenience and economy. Thus a 1st Battalion abroad would ordinarily be relieved from the 2nd Battalion at home by alternate half-battalions or by companies; but after the headquarters had been on a tour of foreign service of sufficient duration, the whole bat-

talion would be relieved by the 1st Battalion of some other regiment. By this system a considerable saving in cost of transport would be effected by obviating the necessity for moving the heavy baggage of regimental offices, stores, and messes so often as at present.

Now as regards the officers. To each regiment should be given an establishment of Regular officers as follows:—One Lieut.-Colonel, three Majors, twelve Captains, and eighteen or twenty Subalterns; and a Militia establishment of one Lieut.-Colonel, one Major, six Captains, and nine Subalterns. During the embodiment of the Militia for war-service or other emergency, the Militia establishment should be increased by two Captains and three Subalterns for two dépôt companies. In the Army List the names of the Militia officers should appear in the ordinary regimental lists, but as juniors of their respective ranks. This could easily be arranged by having a line drawn at the bottom of the names of the Regular officers of each grade, beneath which the names of the Militia officers would appear, their status being designated by a capital *M* against their names, as now may be seen in the index to the Army List. The following example will more clearly explain this, the figures preceding the names denoting the number of the battalion to which the officer is attached:—

110TH (THE BLANKSHIRE) REGIMENT.

1ST AND 2ND BATTALIONS.

Lieut.-Colonels. (2)

1 Jones, R. B. W.

M. 2 Smith, W. J.

Majors. (4)

1 Robinson, C. F.

2 Williams, R. W.

1 Matthews, B.

M. 2 Townsend, E. S.

Captains. (18)

Here would follow the names of twelve Regulars, and then beneath the line the names of six Militia Captains, and so, in like manner, the Subalterns.

As regards the command of the 2nd Battalions, they should, during the time the Militia was not up for training, be under the command of one of the Regular Majors serving at the dépôt; but when the Militia came up, the Militia Colonel (who should, as already stated, be a Reserve officer) would take command, with a Regular Major as his second-in-command and general military adviser. So it will be seen that what we now regard as the Regular Army would under this scheme be largely increased, but only about two-thirds of it would be a Standing Army, the remainder being Militia, only to be embodied as necessary.

The territorial titles need not be altered, except for the purpose of restoring disengaged regiments to counties to which they formerly belonged. At present there are in most cases four battalions of Regulars

and Militia, besides Volunteer battalions, which share the same title. So there would be under this scheme, but there is no reason why the old regimental numbers should not be restored. For instance, take the case of the Hampshire Regiment. The present 1st and 2nd Battalions would revert to their old separate existences as the 37th and 67th Regiments, and their 2nd Battalions would be completed by dividing the present 3rd Battalion into two halves to become portions respectively of the 2nd Battalion of the 37th (Hampshire) Regiment, and the 2nd Battalion of the 67th (Hampshire) Regiment, the dépôts of both regiments being located at Winchester, as at present. This expansive scheme would also facilitate the allocation of regiments to counties now without a regiment, such as Hertfordshire, Nottinghamshire, Cambridgeshire, and others, all of whom feel being left out of the territorial system more than many people imagine. Of course, there would be a difficulty in dealing with the King's Royal Rifles and the Rifle Brigade, but the principle of this proposed arrangement could be applied to them by making their 1st and 3rd Battalions Regulars only, and their 2nd and 4th Battalions composite battalions of Regulars and Militia.

A few matters will be noticeable as resulting from an adoption of this proposal. In the first place, it would, without disturbing the principles of the territorial system, secure the restoration of regimental numbers, which sentiment and utility alike demand. This would be followed by a restoration of battle honours to the battalions respectively entitled to them, a matter which excites a good deal of feeling in the Army. The present dépôts would develop into 2nd Battalions, and thus ensure the better training of recruits in all regimental duties before being passed into the ranks. Again, the efficiency of the Army Reserve, both officers and men, would be assured, by passing into the Militia companies of 2nd Battalions all those who quit the Regular Army with liability to Reserve service. The annual training with the Militia would prevent them from getting out of touch with soldiering. A minor matter would be the simplicity of recognising every 1st Battalion as being in the first line, every 2nd Battalion as being in the second line; and if a portion of the Volunteers were levelled-up to be local Militia, they would follow as the 3rd and 4th Battalions, and form the third and fourth lines.

A short and rough calculation may be added to show the economical effect of this suggested reform. In order to simplify the problem we may leave out of the calculation the King's Royal Rifles and the Rifle Brigade. Under the old *régime* there were 108 ordinary line regiments of which the first twenty-five consisted (as now) of two battalions each. Taking for convenience and simplicity the number of companies, there were thus:—

Battalions.	Companies.
108	\times 10 = 1080 Companies.
25	\times 10 = 250 "
	Total 1330

Under the proposed scheme there would be $108 \times 12 = 1,296$ companies, showing a saving of thirty-four companies, or more than three

battalions; but on the other hand, instead of having what formerly reckoned as 133 battalions, there would in effect be 216 battalions, available for any service; or, including the Rifle battalions, Regular and Militia, a practical addition of nearly 100 battalions to the Regular Army, with lessened expenditure if we take into account the present cost of the whole of the Regular and Militia Infantry. The effect on the Militia would be as follows:—There are now on the establishment 958 companies of ordinary Militia Infantry, and fifty-nine companies belonging to battalions of the King's Royal Rifles and the Rifle Brigade, or a total of 1,017. Leaving the Rifles out, in order to simplify the problem, we find that with six companies to each 2nd Battalion of 108 regiments there would only be 648 companies absorbed. This would leave, even after providing for the Rifles, a surplus of about 300 companies, equal to thirty battalions. These would go toward forming the 3rd and 4th Battalions after completing the establishment of the 2nd Battalions, which would absorb a large portion of the surplus officers and men; and if the re-organisation showed a saving of money, it should be devoted to the following objects:—

1. Increased period of training and better equipment of 2nd Battalions.
2. Increasing the Artillery Militia with a view to the formation of Reserve gunners for the Regular Field Artillery.
3. Forming the 3rd and 4th Battalions.
4. Forming a Militia Transport Corps as a Reserve for the Army Service Corps.

This is, therefore, but the outline of a picture of the possible future of the Infantry of our Army, which might be completed if only the present restraints to a full, free, and natural development of the Militia were removed. What is asked for is not revolution, but permissible evolution; and while reading the lessons of military history, we, as a nation, may well pause to consider how far our present military system can meet the strain of a European war under modern conditions. Amidst the fascinations of tactical deductions, the more commonplace but eminently practical details of organisation down to comparative trifles should not be forgotten. Therefore, this plea is made for needful reform in our territorial system, which may be based on the claims of the Militia to a fuller share of military responsibility. To this it has proved its claim by the manner in which it has backed up the Regulars in the past, as well as by its recent progress and present state of efficiency. But perhaps above all it is as the Constitutional Force, presenting possibilities of indefinite expansion and usefulness, that the Militia appeals most forcibly for national recognition. It is only by a process of needful evolution that it can be enabled to display its worth, and to share worthily in meeting those dangers which so constantly threaten our wide and increasing Empire.

Colonel J. B. STERLING (h.p., late Coldstream Guards): I rise with some hesitation, inasmuch as I sympathise heartily with the lecturer in his endeavour to bring to notice through this audience to a greater one, the circumstances attendant on an important portion of Her Majesty's land

forces; but I deprecate the undercurrent of veiled hostility against another branch of Her Majesty's Service that unmistakably permeates the lecture. It may be true that the comparative newness of the Volunteer Service has removed, to a limited extent, the appreciative glances of the outside public from the old constitutional and useful force; but in the circles of those who know and those who control, each branch is appreciated at its respective worth. I would venture to add that a deviation from the *principle* of organisation, which we are here discussing, to the isolated instance of that historical corps the Honourable Artillery Company, is scarcely judicious, neither does such a course further the views shared equally by you, Sir, and by the audience, and by the lecturer, that the dominant idea is desire for an effective force for the service of the Queen and the country. One element in this question has been strongly slurred over. The proposition that twenty-seven battalions of infantry should be added to the Army, is a matter which, as regards cost, demands the closest investigation. The lecturer eliminates from his thesis the consideration of the Foot Guards, and I will do the same. He speaks with bated breath about the King's Royal Rifle Corps and the Rifle Brigade, but he launches out fully and unmistakably as to his proposed scheme for dealing with the remaining infantry battalions of the Army. At present we have 141 battalions, of whom seventy-five are abroad and sixty-six at home. His proposal is so to alter this formation as to make 108, the same number as the existing regiments before the introduction of the territorial system, *plus* an equal number of half-battalions, in addition to three battalions of the King's Royal Rifle Corps and three of the Rifle Brigade; assuming that two half-battalions equal a whole one, this makes altogether 168 battalions. Recurring to the Green Jackets, he proposes to reduce their battalions to four complete ones and four halves, so that the gross nett addition to the infantry of the line is twenty-seven battalions in all. The cost of each battalion may be reckoned at about £65,000, and we have here an annual increase of charges of nearly £2,000,000, excluding the necessary extensions of barracks and other accommodation. There are also working details which would jeopardise the success of his proposed scheme, and of these I will mention two. First, a major is to command the permanent half-battalion and its permanent staff for ten-and-a-half months in the year; but he is to be only second in command during the one-and-a-half months in which the Militia is called out for training. Second, the proposed relief of the foreign service battalion is to be by half-battalions at a time, and would fail to stand practical test; for the relieving half-battalion would up to the time for embarkation have been pouring its efficients into the battalion abroad, thus denuding itself of its bone and sinew in order to supply a constant waste of time-expired men and invalids: hence the remains would for the most part be unfit for foreign service. Whatever merits the proposed scheme may have, they are inapplicable to our present needs or powers. On some of the points I cordially agree with the lecturer, but it is not on the lines which he proposes that we can remove the undue stress that increased Empire has thrown on the present territorial system.

Major L. W. PEAD (3rd Batt. Royal Fusiliers): I do not propose to argue for or against the substance of the very excellent lecture which we have heard read; but I should like, if in order, to add one or two suggestions for the improvement of the Militia. I think, in the first place, that we should have at the Horse Guards a purely Militia staff to look after our interests; that our Adjutant-General should be an officer who had had all, or nearly all, his service in the Militia, and who had commanded a Militia battalion, and that his staff should be composed of purely Militia officers. Not for one moment do I wish to convey the idea that the officers, as at present appointed from the Regular Army, are not the very best we can get; but I do think that an officer born and bred in the Militia would be better able to deal with those purely Militia points which constantly must come before him for decision, and also because it would be some slight reward for a zealous officer of Militia to be able to look forward to such an appointment.

Then again, I would abolish honorary rank. I don't know how it works in the Volunteers, but in the Militia it is out of place, anyhow as long as a man is serving, and is the cause of some little jealousy and heartburning. I would substitute real brevet rank in its place, but I would not make mere length of service a claim for it. There are officers and officers; there are men who have served thirty or forty years, and who have never really benefited the Service at all. There are others who with fifteen or twenty years' service, or even less, have done good and meritorious service; have, perhaps, been the making of a battalion, have brought recruits, officers, or men into a depleted regiment, or have zealously qualified themselves by passing voluntary examinations, or who have been over and over again specially commended in confidential reports. To these men brevet rank would be some reward, and a decoration, not for length of service, but for special service, might even be occasionally bestowed; while on commanding officers who have, as many have done, spent time, money, and energy in the welfare of their battalions, an occasional C.B. might be conferred. I also venture to think the time has come when the Militia might provide their own adjutants.

Colonel J. MOUNT BATTEN (3rd Batt. The King's Liverpool Regiment): I rise to order, Sir. I thought we were to discuss the evolution of the Militia. Are we not getting rather far a-field? I was not aware that we were going to discuss the constitution of the Militia. If so, I might have been prepared to say something on the subject. I am rather taken by surprise.

The CHAIRMAN: I think, looking at the paper before us, and the particular subject dealt with, we should not go into the general question of the Militia; and if Major Pead will allow me to say so, I think he is a little out of order.

Captain W. H. HARRISON (retired pay): There is one point in the lecture which struck me as being rather fatal to one part of the system; that is where the lecturer says that every candidate for the army should "first" join the Militia, and, after a period of one or two trainings, if fit, be passed into the Army. I do not know whether the lecturer has any experience in recruiting, but I fail to see, speaking from experience, how you could get young men to enter the Militia for a period of say sixty or seventy days' training, or even three months, then to go back to their homes, to come up for another training the second year, and subsequently get them to join the Army. Numbers of men in the Militia purchase their discharge before they have done their first training. A man changes his mind, he may not like discipline. He goes home, and gets his discharge. I venture to think you would hardly get sufficient men for the Army if all candidates had to go through the Militia first, seeing that he is permitted to go home in the interval between trainings, and thus given time to reflect on the step he has taken.

Colonel C. L. DE SALIS (7th Batt. The Rifle Brigade): I should like to ask the lecturer a question with regard to the composition of the six Militia companies of the 2nd Battalions. He speaks of men passing from the Militia into the Line, and then of their reverting to the Militia, eventually, after seven years' service with the colours. I should like to know therefore, with regard to these companies of Militia—*so-called* Militia—are they to be *bonâ-fide* Militia, or are they to be formed into an army reserve? because the lecturer says that the men (having once passed the Line) are to revert to the 2nd Battalions. I presume they must go to the six companies. We have at the present moment, I think, something like 80,000 reservists; these men would therefore form part of the six companies of each 2nd Battalion, and in that case I should like to know from what are we in future to draw from the Militia into the Line, seeing that so many of them would be reserve men. Then with regard to the officer candidates: the lecturer says each officer candidate must pass from the Militia into the Line. I quite agree there; but if each of the 134 2nd Battalions is to have nine subalterns *only*, does that leave a sufficient number of men in the

Militia, when you consider the proportion of Army candidates who have failed, and who still remain in the Militia? Have you then sufficient ground-work to furnish the number of Line candidates for the Army? I think not.

Lieut.-Colonel C. BILL, M.P. (4th Batt. North Staffordshire Regiment): I will not follow the lecturer through the very important topics which he has brought to our notice to-day, because I think they require very great consideration on our part; but there are portions of his lecture with which I most thoroughly agree, and I especially agree with the words that he used with reference to the danger lest the Militia should degenerate into a mere recruiting force. As a colonel of Militia, I think all of us who command Militia regiments must feel that the possibility of the regiment in which we take so much pride being first denuded of its reserve men, 250 or 300 in number, the pick of the regiment, and then possibly being left behind at some dépôt merely for the purpose of providing recruits who would be sent, not into one regiment, not to its own historical regiment, but possibly to fill up gaps in many other regiments, is an idea which is most distressing to a colonel who wishes to help his regiment as a unit of the British Army, complete as far as possible and ready to go abroad and serve his country in other parts of the world. What I approve of very much is the suggestion of the lecturer that there should be a Royal Commission appointed for the purpose of seeing how the Militia can be levelled-up towards the Line. I think that is a most excellent suggestion, and I trust that means may be taken under the pressure of public opinion, acting through this meeting, to press this on the consideration of the Government. You have ruled, Sir, and I think rightly ruled, that there should be no general discussion on the Militia. I had the pleasure of taking part in the House of Commons the other night in a discussion when the Militia Vote came on, and perhaps you will forgive me for saying, though it is part of the general question, that I was very glad to be able to point out how absenteeism, which only a few years ago was such a conspicuous blot on our Militia system, is now to a very great extent being improved. One other suggestion I should like to make is, that I agree entirely with the author's remark that each Militia regiment should have six weeks' training, I do not say every year, because that possibly might go in the direction of checking recruiting; but I think at any rate, every second year the Militia should train six weeks, and in that second year it would have the opportunity of doing its shooting for a fortnight of the time, and would have the remaining four weeks to be brigaded or brought into line with the Regular force. I have served thirty years in the Militia, and there have been only two years in which I have at any time been brought into contact with the Regular forces in all those thirty years. I think it is worth most careful consideration. There is nothing which does the regiment more good than being brought into contact with the Regular forces, and also with the Volunteers at the same time. I think if some such arrangement could be carried out every other year, it would inaugurate a very vast improvement in our military service.

Major R. HOLDEN (4th Batt. Worcestershire Regiment): Major Williams having done me the honour to ask me to read his paper for him, I do not wish it to be assumed that I, therefore, agree with the scheme which he has to-day laid before us. It may seem ungracious on my part, but I disagreed with him entirely; and I gather that my views are coincided in by many of my brother-officers. We, in the Militia, are, I think, perfectly satisfied with the position accorded to us in the military organisation of this country. The part which we are called upon to play is a very important one, as anyone who takes the trouble to read the evidence given by the present Commander-in-Chief and Major-General Grove before the last Militia Committee will see to his satisfaction. But we cannot too strongly impress upon the authorities the importance of our being given every opportunity of qualifying ourselves to play that part with credit to ourselves and the country. And, in this connection, we cannot be too thankful to the authorities for giving us the opportunity of participating in manœuvres on the scale of those in which my

battalion is to take part near Aldershot in the coming autumn. For this unprecedented favour and indulgence I believe we are indebted to Sir Francis Grenfell, and I feel sure it is thoroughly appreciated by the whole Militia Service. Our chief complaint in the Militia is that the authorities utilise us too much as a recruiting agency, charge us unfairly with a large portion of the expense, and give us next to nothing in return. And I should like to see any further evolution in the Militia take the direction of our being treated more as a force which will some day have to fight, perhaps at home and possibly abroad. I hold very strong views on one subject mentioned by Major Williams—the limit of service in the Militia, and I should like to see every recruit enlisted for the Militia rendered liable to serve either at home or abroad whenever he is liable for embodiment. I will not trouble you with the scheme by which that could be brought about without any additional cost to the country—it is all contained in a lecture which I delivered in this Institution in 1891. If the Militia can further evolve in that direction, I feel sure that it would be to the advantage of the country and the Militia. I should be very sorry indeed to see Major Williams' scheme of evolution practised on the Militia, for, as far as I am able to judge, it would result in our being evolved altogether off the face of the earth. We are quite content to be left as we are, simple Militiamen, much misunderstood, and not properly appreciated by the authorities, entirely unknown to the public, but in our own estimation a very fine force which has often been tried and never found wanting; and which, in any future wars, will play an important part. Major Williams' scheme involves the restoration of numbers in the Army, and the Militia becoming sort of mongrel battalions of numbered line regiments. I entirely disagree with this, as I am strongly in favour of territorialism, especially in regard to the Militia. We are nothing if we are not territorial, and we don't want to have our identity lost in a numbered regiment. I think the territorial system has worked admirably; it has brought the Line, the Militia, and the Volunteers together in one family. And I hope it will never be interfered with. I think it is a great pity that Army Reservemen are not required to undergo some training annually: they might with advantage do a week's training with the Militia as supernumeraries. One more point. Major Williams talks of our taking up a position, under his scheme, in the "Second Line." This is putting the clock back. I wonder how often it will be necessary to explain that the Militia has nothing whatever to say to the Second Line. If Militia officers do not understand the position of their own Force, one can hardly expect the public to do so. The official ruling of the position of the Militia, in the event of invasion, is that "the regiments would be called upon as they stand, and would be used in the first line." We also know that no military expedition could be sent abroad, and maintained at its fighting strength in the event of the country being engaged in a serious foreign war, without the embodiment of the Militia. And it would then become in all respects a part of the Regular Army; within, of course, the limit that it cannot, by present Act of Parliament, volunteer for service beyond the Mediterranean. But enlist all Militiamen for service anywhere, than which there is nothing more simple and less costly, and our position is one of very great strength. That evolution, coupled with proper clothing for the men, and the opportunity for more extended training and education of the officers, is quite sufficient for me.

Lieut.-Colonel O. T. DUKE (5th Batt. The Rifle Brigade): I think, in the discussion that has taken place so far, there has been a tendency to lose sight of the object with which Major Williams brought forward this paper. It seems to me that as Militia officers we all owe him a very great debt of gratitude for coming forward at this Institution and holding up aloft the banner of the Militia force. I am not saying whether we all quite agree with what he has said; but he has spoken, or rather written, under a strong spirit of loyalty to the Militia, and he has written also under a strong feeling of neglect of the Militia. He has written under a strong feeling that throughout the length

and breadth of this country there is an ignorance, a great ignorance, with regard to the capabilities and natures of our Militia forces. He has begun at the foundation, and I take it he hopes and considers that the paper he has brought before us is only the beginning of a series of papers which will be read by other officers in the interests of the Militia force. There is one great question which it seems to me he has wanted us to consider. First of all, he told us the history of the Militia. It has a grand history, but, however grand its history, if it does not fill up a want of the present day, then pedigree or history are matters which cannot be considered as of practical value. The question which really is before the country is, Does it fill up a need, is it a necessity at the present time? We, as Militia officers, feel that we are a power, and that we shall be able to do splendid service to the country when the time comes for such service. The question is, How are we to be made into the force which we feel we ought to be, and which we know we are not? By bringing forward this matter in the way that Major Williams has brought it forward, he has put that point before the country. He asks for a Royal Commission. He says, "Let the Royal Commission look at the Militia, let it see whether it holds its proper relation to the Regular forces of the country." It seems to me that the fact which we have to enquire into is this, or at least one of the facts, Has the Regular Army usurped, to a certain extent, the position of the Militia? It is very evident from Major Williams' paper that he considers that the Regular Army is at the present moment, to a certain extent, performing the duties of the Militia forces of the country. That is the real question which we have to consider, Have we been pushed out of our proper duties by the Regular Army? My own belief is that we have; and if a Royal Commission should be appointed, it will be found that we are being kept in the background, not by the Volunteers, but by the Regular Army itself. This is a very important aspect of the question which he has brought forward, and I think we owe him our thanks for the courage which he has had in bringing forward such a point; hitherto, we have been told that we are squeezed out by the Volunteers. I am quite sure, personally, Major Williams has no jealous feeling whatever against the Volunteers, that he wishes the Volunteers well, that he knows they are a splendid body of men ready to do good service for the country. We say that we have been pushed out, not by the Volunteers, but by the Regular Army, and the whole point can only be settled by having a Royal Commission to go into the question. We have at the present time a Commander-in-Chief who takes the keenest interest in the Militia, who looks, I believe, at the Militia force as the coming force which is to stand by him in the great wars which must come upon this country before very long. With regard to Major Williams' scheme, I do not think it is practicable, and, I believe, is one that could not possibly be carried out. His scheme would get rid of everything that has been done in connection with the Army for the last forty or fifty years. It propounds a revolution, an unprecedented revolution; but still he comes before us and says, "If you do not agree with this plan, show me something better." It is always good to create argument. If Major Williams' paper serves to open up a series of discussions, nothing but good can come of such discussions; and, I believe, we owe him our very hearty thanks, as Militia officers, for the position that he has taken up.

Lieut.-Colonel R. E. W. GARNHAM (late 4th Batt. West Riding Regiment): It is very nearly forty years since I took over the command of a Militia company. I commanded my battalion both in camp and quarters, and only retired a few years before I should have been retired by age. I most cordially re-echo the remarks of the last speakers, as regards the thanks we owe to the lecturer for having called attention to the Militia. I somewhat regret, Sir, that by your decision we are unable to make suggestions on this occasion with regard to what we think might be done; and I regret that I also agree with the last speaker in thinking that the suggestions contained in the very interesting lecture that we have heard will turn out to be impracticable.

I think that what Colonel Sterling said with regard to the question of expense, would at once put the matter completely out of the question. I remember on one occasion in this Institution, when a former financial Secretary of State was in the chair, a suggestion of mine was commented on by him, not as the best suggestion that had been made, but as the only practicable one, *because it involved no extra expense*; and although we have gained a great deal of late years—and the Militia is by no means the force it was when I joined it—still the question of expense will always remain a very important one. I must confess, although I have only just glanced over the lecture and heard it read, that it does appear as if the Militia would be rather evolved out of existence altogether by the suggestions it contains. I also confess I would very much sooner see the progress which has been made, to my knowledge, in the last thirty-six years continued in the same direction, than have new schemes started for the purpose of changing the Service altogether. There is no necessity for jealousy on the part of the Militia as regards the Volunteers. There is no necessity for any unpleasant feeling on the part of the Militia with respect to the feeling towards it of the Army. Nothing can be better than the feeling which has existed all through my service, to my knowledge, between the two Services. I have personally received from all the Inspector-Generals the utmost assistance, both as a company and a commanding officer; and I am perfectly certain all that is wanted is to try to get as much as we can without involving too much expense. There was a suggestion made in this Institution, when General Elkington was appointed Adjutant-General for Reserve Forces, that flannel shirts should be issued to Militiamen. He was struck with the suggestion, and promised me to take it up. I met him afterwards, and he said:—"What happened when I went back to the War Office was this. I asked if the matter had been discussed before, and I was shown a bundle of papers, and was told that flannel shirts would cost so many thousands of pounds extra; and it had, therefore, been shelved." The first thing Militia officers have to do, in my opinion, when considering suggestions for the amelioration of the Militia, is to consider how far it may involve expense, and what the Treasury will say to them; and I do not think it is a time when they will be inclined to go forward with any great scheme for revolutionising the Service. We have gained a great deal, as I have said, over our former position, and I hope that we shall still go on gaining. One thing that we do require is greater time and opportunity for musketry instruction. When I was a commanding officer I never grudged one single moment of musketry instruction: it improved the men in every way, besides teaching them the great matter they had to learn. Then there is another question which I think is of very great importance, viz., that the circumstances of the different counties should be considered. I remember General Herbert saying some years ago that the requirements of one Militia regiment were as different from those of another Militia regiment as possible, and I cordially agreed with him. Therefore I do not think they could carry out the scheme to which we have all listened with great interest, because it would not be applicable to a great many parts of the country, the conditions of the Militia service being so different. We want elasticity. There are many other remarks which I could make, but it would be rather against the decision of the chair. I think the suggestion of a Royal Commission is a most important one. We have in Lord Wolseley an officer perfectly inclined to take active steps for such an object, and we ought to help him in bringing the matter forward; and I think that a Royal Commission would be a very good plan for the purpose. I shall be pleased to hear what the lecturer has to say; but I think we should rather try to go on improving on the same lines that we have already followed.

Lieut.-Colonel LORD RAGLAN (Royal Monmouthshire Engineer Militia): It is always an ungracious thing to have to disagree with a lecturer as I do, but Major Williams knows from some correspondence that I have had with him, that I do not agree with the fundamental principle of his lecture.

There is one point which is often very much overlooked, and it is one which I think Major Williams has had in his mind when drawing up this lecture, viz: that in this country at this moment we keep up a very vast armed force. The total of all the forces in this country is something over 550,000 armed men of all sorts, and the net result for war of that 550,000 men is the celebrated 1st Army Corps, because no human being believes in the 2nd Army Corps, so that we absolutely keep up at an enormous expense 550,000 men in order with immense difficulty to send 35,000 men abroad. That seems to me to be a most ridiculous position for us to be in. First of all the bogey of invasion is always shaken before our eyes at every moment. It is a very nice easy thing to say, "They will come and invade us," but as far as my humble opinion is concerned not only do I not believe in invasion, but I believe if we were once seriously threatened with an invasion and there was a 6 to 4 chance of its coming off, the only thing we could do would be to make peace at the first possible opportunity, because before an invasion has the remotest chance of coming off the entire British fleet must be destroyed or masked in harbours by a superior force; and if the British fleet was destroyed or masked in harbours by a superior force, in about another three weeks we should not have any rolls on the table for breakfast, and therefore should be obliged to make peace on the enemy's own terms. As I take that view, it seems to me an extraordinary thing that we should absolutely keep this vast force of 550,000 men, out of which we should only pretend to be able to employ 200,000 abroad, while 350,000 are not to do anything at all until the enemy land on our shores, and that out of the 200,000 we are absolutely only in a position to send abroad 35,000. I take it that is very much what Major Williams meant in bringing forward this lecture, which is how the Militia should be employed, not as many people are in the habit of thinking they will be employed in sitting on the shores at high-water mark at Dover, and shooting at the enemy when he comes over, but in invading the enemy's country, which is what we shall have to do when war comes on. I do not agree with Major Williams' way of doing it, because, as far as I can make out, the Militia will have evolved away altogether; but I agree thoroughly that we owe him a great debt of gratitude for bringing forward any suggestion about the Militia, and I am very sorry that you, Sir, have ruled that we may not discuss the general question. There are one or two points which I think I shall be in order in touching upon; one is, and to my mind the most important one, the crying wants of officers. Colonel Sterling does not like any allusion to Volunteers in any way, but a great deal of fuss has been made for some considerable time about the want of officers for that Force. There is a want of officers for the Volunteers, it is nothing like the want of officers for the Militia. The actual proportion of deficiency in the Volunteers is not really very great, and for a force which is never going outside high-water mark of this country a subaltern, more or less, does not very much signify; but for a Force like the Militia, out of which will have to come a very large proportion of officers for any Army we may send abroad in the event of war, it is a very serious matter that there should be a deficiency of officers. Not very long ago I had a correspondence with a commanding officer of a Militia regiment. He wrote and said, "I think the deficiency of officers is more apparent than real, inasmuch as the larger number of officers who are going through the Militia go up for their examination and pass into the Army in March, the commanding officers of Militia have not time to replace them before the annual training; and, therefore, at the annual training the regiments are deficient of subalterns." He added, "I think if you will look through the Army List you will probably find in January or February most Militia regiments are up to the strength in officers." Well, I took the Army List of January, and counting the two or three Militia battalions of each territorial regiment as one, there were only seven corps of Militia in the United Kingdom who were up to strength in officers. There were 13 field officers, 91 captains, and something like 535 subalterns short. I am sorry I had not

time before this lecture to go through the Army List of this month. I did in fact go through it, but I have not had time to add up the figures. It seems, however, to work out very much the same. There is one great double battalion regiment which has twenty officers short at this moment. That is a most serious point, especially when you remember the very small number of subalterns who are in the Regular Army, and that there is no place from which you can get extra subalterns at a moment's notice except from the Militia. If, therefore, you suddenly drew 700 or 800 subalterns from the Militia in order to join the Regular Army in the event of war, the Militia subalterns would be reduced to next to none at all. I think that is a very serious point. Another point which is still more serious is the very small encouragement given to officers to attend classes or in any way to perfect themselves in their military duties. Comparisons are odious, but as a matter of fact plenty of allowances are made to officers of Volunteers for passing examinations for which no allowances are made to Militia officers. So that you actually have arrived at the extraordinary position of paying your unpaid Force for what you refuse to pay your paid Force. One other matter I should like to touch upon is the idea of small 2nd Battalions, and I would put that to Major Williams, because if a home battalion of 720 rank and file can hardly keep up the foreign drafts, how could a half-battalion of only 400 rank and file have the least chance of doing it? Another point is the question of local Militiamen. I should like to see a good scheme for turning a large portion of the Volunteer force into local Militia. As a matter of fact the Volunteers as they are now, consist in by far the greater number of corps of precisely the same class of men who are in the Militia, and the number of really what you call "class" corps might be counted on the fingers of your hand. The result is, especially in those country corps which nobody knows anything very much about, the men are exceedingly well paid. The battalion comes into camp, and the men get food and they get paid a shilling a day; they get a great deal of beer given them, and those men may just as well be turned into local Militia; they are exactly the same class of men.

Lieut.-Colonel DUKE: Sir, may I be allowed to ask a question with reference to what the last speaker said about keeping up a force of 550,000 men in order to send out an army corps consisting of 35,000 men abroad. I imagine that the 550,000 men are for the purpose of defending the country against an invasion, but can he tell us the numbers of the forces which are already maintained in countries beyond the seas and which are fed from that 550,000.

Lord RAGLAN: I am quite aware that we have to maintain our forces in India and elsewhere, but still as a matter of fact there is, I suppose, no army in the world which proposes to send out such a very small proportion of its armed force to war as we do.

Major A. B. WILLIAMS: In the first place, I would express my thanks to those who have spoken so kindly of my effort here this afternoon. I can assure you my object has been to serve the country and to propose a scheme for the benefit of the Army generally. I deeply regret, however, that Colonel Sterling should have said that there was throughout my paper an under-current of hostility to the Volunteers. Nothing was more opposed to my intention. I had the honour of serving eighteen years in the Volunteers before I joined the Militia. I honour the Volunteers, and look back to my days with them as some of the happiest and most profitable days I ever spent as a soldier. It seems to me an unfortunate thing that whenever a word is said about the Volunteers somebody is sure to get up in arms and try to aggravate a most regrettable feeling. Colonel Sterling brought out a statement of figures at which I must say I was perfectly appalled, giving his estimate of the expense involved under this scheme. I did not go as deeply into it as he appears to have done, but from the cursory calculations which I made I did not suppose the expense would be so great; but assuming that it would, I would ask him whether, in view of all that has been

said about national defence, some increased expenditure is not absolutely necessary to keep up the effective strength of the Army? The idea now is to add no less than twelve battalions to the Regular Army in order to keep up the balance between the home and foreign garrisons; so that if you regard my scheme as a whole, taking into account the amount you would save, in many ways, I do not think the expense would be so great.¹ I was asked a question about keeping a man in the Militia for one, two, or three years before allowing him to join the Regulars. My answer is that if a man is not a desirable recruit for the Regular Army he should not be accepted. Are we to legislate for these men individually or for the Army? We want to get for the Army the very best men, and if a recruit is not all that he ought to be he should not be taken until he is fit. If there was a likelihood of his being suitable in the near future I would pass him on to one of the Depôt Companies, but what I am anxious to convey is that no man should be passed into the Regular Army except he was thoroughly matured and fit in every way. Colonel de Salis asked if there were only six companies of *bonâ fide* Militia, how would I find room enough for the 80,000 Reservemen? The idea in my mind is that the men after leaving the Regulars would continually be passing away to the rear; they would stop in the 2nd Battalion, the Militia, only a short time, then they would be passed on to the 3rd or 4th Battalions, and so on back to the Reserve. They would not all be in the Militia at the same time. The reason for this passing from one battalion to the other is that it would make it easier for the Reservemen because the terms of service in the 3rd or 4th Battalions would not be so onerous, and therefore less likely to interfere with their civilian occupation. With regard to the officers there would also be a continuous flow. And I would provide some scheme for retaining in the Militia as subalterns those officers who failed to pass into the Regular Army. Major Holden thinks that my scheme would wipe out the Militia. I do not agree with either him or Lord Raglan on that point. My proposal is to expand the Militia so as to form a better support for the Army. Where you now have only one battalion of Militia, for the future under my scheme you would have three. I cannot, therefore, see how this proposal would wipe out the Militia. On the other hand, it would increase and improve the force for Home defence and for supplying the Regular Army with men. I must add a word of thanks to Colonel Duke for his speech. Whatever may be the defects of my proposals, they have been made only with a view to try and benefit the Service. I have tried in dealing with the historical portion of the subject to show that in the past from the days of King Alfred to Crécy, Poitiers, and Agincourt, in the Peninsula, at Waterloo, and down to the Crimea, it has ever been the Militia who have provided the Army of England to a large extent. I want the Militia to be allowed thus to go on, to expand and grow, and to back up the Army in the future as in the past. Colonel Garnham spoke about the War Office viewing everything from a financial standpoint; but, I would ask, How can we have an efficient Army without increased expense? If anybody will propose a scheme whereby we can re-organise the Army and make it better available for service without increasing expenditure he would deserve the undying gratitude of the country.

¹ A little consideration will show the justice of my claim to economy on behalf of my scheme. I have explained that the revision of Regular Establishments would effect a saving of thirty-four companies, or equal to about sixty officers and 1,500 men. In each regiment there would further be a reduction of two majors, while at the Depôts the present triplicate establishment (*i.e.*, Depôt and two Militia Battalions) would be reduced considerably. Then the adoption of my proposals would obviate the necessity for carrying out the suggestion that, in order to restore the balance of home and foreign battalions, an addition must be made to the Regulars of ten or twelve battalions which would entail a very heavy increased expenditure. Taking, therefore, my proposals as a whole they would directly and indirectly cause a very decided economy, and not the exaggerated additional outlay estimated, in my opinion so erroneously, by Colonel Sterling.—A. B. W.

This question, however, has been fought out and thought over so often that I do not think we can find a properly defensive force except we spend a little more money. If the country wants defence it must pay for it. It is simply a question of premium insurance. Lord Raglan asked how could a Militia battalion provide nearly 800 recruits annually to its 1st Battalion. My reply is in my paper, I propose that the recruiting of the 1st Battalion should be taken up not only by the 2nd but also by the 3rd and 4th Battalions. The Volunteers now without being pressed in any way send a number of men to the Regular Army.

LORD RAGLAN: Not very many.

Major WILLIAMS: I speak with experience of the Volunteers and I know that they do send some men into the Army. No bounty is given them, but they enlist out of a pure love of soldiering. Suppose these 3rd and 4th Battalions were canvassed and some little inducement held out, I believe they would provide a large number of recruits. While I am speaking of the 3rd and 4th Battalions, I would like to say I do hope it will be understood that what I have said in my paper about levelling-up the Volunteers is in no way intended to disparage them. My idea is, we should keep in view first what is for the good of the country and of the Army. If the Volunteers can be made all that they ought to be and all that they want to be, as they are at present constituted, then we should leave them alone. My opinion, however, is that they would be much more useful in every way if they were changed into a paid Militia force. They do not like the word "Militia": call them "Yeomanry," anything you please; but my idea is that the time has come when they should be levelled-up into paid force as they now practically are. I have served with five battalions of Volunteers, and in every battalion, except one, the men were paid in some way or other. The country should take this matter up and openly pay them as soldiers, and expect them to be soldiers. I would, however, retain such corps as the Inns of Court and the 'Varsity Corps, where you can ensure gentlemen being in the ranks, men who could afford to be Volunteers; these I would encourage with a view to the supply of officers for the 3rd and 4th Battalions, and thus give every man in the country a chance, according to his condition, of serving in some branch of the Army.

The CHAIRMAN (Colonel J. Davis): Time is going on, and there are a number of remarks I intended to make that I shall not be able to refer to. I think we must all agree very cordially in thanking the author for his most interesting and valuable paper; a paper which I hope will start a series of like papers upon the national value of the Militia, and its present place in the defensive forces of this country. I trust the future papers will be found to be of equal value and interest as the present one. I am very glad to hear from Major Williams that he had no feeling inimical to the Volunteers. He has expressed his own sentiments as a former officer of Volunteers, and has spoken so highly of the Force that I think we may let that part of the discussion on his paper pass away from our minds. I do not agree with the lecturer in one thing: I do not think the evolution of the Militia has stopped altogether. I believe the Militia, as we all know it, has increased marvellously in efficiency—and in every quality going to make a true soldier—in the last fifteen or twenty years. Colonel Garnham called attention to that great fact to which I can bear testimony; for I remember perfectly well many years ago marching to Aldershot with my regiment, and feeling that there was a very great deal of room for improvement before they were made soldiers. I think the evolution of the Militia must come from within. The War Office are thoroughly alive to the interests of this great country, and the great heads of departments, from the Commander-in-Chief and Sir Redvers Buller downwards, feel the great responsibility they have in defending this great Empire. Their only desire, I feel sure, is to see our Militia make itself more and more valuable as a Force, and to this end I say the evolution must come from within. Every officer and man of a battalion must feel that the force is the great soldier Force of the country, and try

to make it so. I hope the evolution of the Militia will go on till the country feels that the time has arrived when it can be given a greater amount of responsibility, and that every Militia regiment in times of great national emergency will be allowed to take its colours to the front and win some battle name that they may be proud of. It is quite a mistake to imagine that the heads of departments have ever been inimical to the Militia. I am quite sure Lord Wolseley has the very highest opinion of the Force, and intends during his term of office to do everything he can to enhance its value and make the Militia more valuable to the country. Sir Redvers Buller, at the dinner we had the honour of giving the late Commander-in-Chief, spoke some very pregnant words, and I was very pleased to hear him give his strong opinion that the Militia force of this country was the real base of the Army. Such an admission from the Adjutant-General of the Forces, I think, ought to satisfy us, and I hope will satisfy the author of the paper, that the evolution of the Militia has not been stopped, and will not be stopped. But there is one very vital question, I think, we ought by every possible means to urge the Government to give its attention to, and I should like to see very much indeed, the question of improved shooting in the Army generally more earnestly taken up. That is one of the vital questions for the Militia at the present moment. There is no doubt about it the Militia do not shoot as well as they ought to do. The Army itself might be improved in shooting, but the shooting of the Militia is a long way behind what it ought to be in order to make the Militia soldier a unit of a strong fighting force. I do hope the question of ranges will be taken in hand by the Government, and that before long we shall have (as, I think, Colonel Garnham recommended in his speech), either once in two years, or once in three years, a little more time given to our training, so that we shall be able to give that attention which is necessary to this vital question of shooting. I think the author of the paper said something about foreign nations having levelled-up their Militia to the Regular Army. I do not know whether any officer here present knows what the appreciation of foreign officers is of our Militia. It is a very high one, and I was very much struck many years ago with the opinion of a very great soldier, long since gone to his rest, who studied, as foreign officers do very much, the constitution of our military forces. The great Russian, General Skobeloff, after the assaults on Plevna—when the Turkish Militiamen defended their country against the Regular Army of Russia in a masterly manner under that great General Osman Pasha—said “English officers,” and I have often thought of those words, and never miss an opportunity of repeating them, “English officers may take a lesson from the assaults before Plevna, namely, that with her Militia army she may be able to wage war against the great Continental Powers.” I think the heads of our War Office are quite alive to the value of the Militia, and I believe before the present Commander-in-Chief’s term of office expires he will, with the assistance of that very excellent and splendid soldier Sir Francis Grenfell, do a great deal to bring the Militia towards what we all wish it to be, viz., the real good Army Reserve of England. I think you will all agree with me in according a very hearty vote of thanks to Major Williams, and I beg in your name to offer it to him.

NOTES ON TACTICS FOR SHIPS AND WEAPONS OF THE PRESENT DAY.

By Captain H. J. MAY, C.B., R.N.

PART I.

ALTHOUGH there have been very great changes in the last few years, and enormous changes in the last century, in the design, equipment, and armament of our fighting-ships, I cannot agree with those who seem to consider that in studying the tactics of the present day we must throw all history and experience to the winds and start *de novo*, as if the art of Naval Tactics had yet to be invented. I believe if we had more exact accounts of the tactics of our great forefathers we should find a great deal of the highest importance to aid us in the present day, whether we are considering the single ship or cruiser action, or the concerted manœuvres of a fleet. One thing, at any rate, stands out most prominently, namely, that the wonderful successes which marked the wars of the French Revolution and of the Napoleonic era were in no sense due, as some writers would almost lead us to suppose, to some inherent inborn superiority of the British officers and seamen, but they were a natural result of the constant experience gained in many a weary month's combat with the elements in company with other ships; so that each captain acquired the habit of prompt decision and immediate action in the face of every emergency, and the several ships were able to rely with implicit confidence on each other—whether the need of combined action arose from the presence of the enemy or the emergencies common to a life at sea in sailing-ships.

If conditions have so far changed that the motive power to be used in action, namely, the highest power which the engines can exert, is no longer used every day in a fleet as full-sail power was always used, still we have this advantage due to the exact knowledge of the manœuvring power of our ships that we can now study on paper, and better still in boats or other small craft, the manœuvres of a ship or body of ships, and thus have greater facilities for imprinting in our minds the power and limitations of a fleet, as regards its mobility, than our forefathers had.

In comparing our fighting-ships of the present day with those of our forefathers, we find that, whereas the latter were built and equipped with the view of maintaining the command of the sea with one weapon only, the gun, our present ships have, in addition, the ram and torpedo. Moreover, the means of locomotion and of bringing the weapons to bear no longer depends upon masts and sails, which were liable to suffer severely during the action, often rendering manœuvring impossible; but are dependent on a far more certain means of propulsion, more reliable in two important particulars. Ships are no longer at the mercy of shifts of

wind and calms, nor is the propelling gear liable to be shot away. If, therefore, with a limited choice of weapons and inadequate means of bringing them to bear it was necessary to be assiduous in the study and practice of tactical exercises, the results of which study are to be seen in the wonderful successes of Nelson and his contemporaries; this is to an immensely greater extent necessary in the present day, when the weapons have been so greatly improved and ships can be worked with almost mathematical precision, so that the manœuvres decided upon can be carried out with unerring accuracy.

I believe it is simply owing to the variety and complexity of the problems now requiring solution, and not because they are insoluble, that, if we are to judge by what is generally known and promulgated, no system of tactics has been published by authority since the introduction of the modern type of fighting-ship. For example, such questions as whether we are to fight end on or broadside on, at long or short ranges, what weapons we are mainly to rely on, how ships in company should be formed for attack and mutual support—though at present moot points on which such different ideas prevail, that it would not be surprising to see officers trained in the same school and under the same flag making entirely different dispositions—cannot surely be insoluble. In all ages and with all weapons, both afloat and ashore, experience has shown that the force that fights on some definite system is likely to prove superior to one that has no system, save what may be evolved when the emergency arises, or which trusts mainly to the individual capacity and resource of the units of which the fighting body is composed; and I hope within the narrow limits to which my space confines me to elucidate some facts which may serve as marks for the guidance or warning of the modern tactician.

It is most necessary in considering any system, or proposed system, of tactics, to be as practical as possible, and for this purpose it is futile to suppose that perfectly ideal ships will always be available. New ships and old ships, fast ships and slow ships, weak ships and powerful ships, will always exist; and it is therefore of the first importance to suit our tactics to the ships which we have, rather than to some type of perfection which we would like to possess, but of which few or any have been built.

But at the same time it will greatly assist us if we can so classify the ships that we have, as to get a simple conception of what they can and cannot do, and so get a better grasp of the weapon which we wish to handle.

In old days the mention of the number of guns carried by a ship at once determined her class, her powers, and limitations, but this happy state of simplicity has long ago disappeared. Still, now as then, notwithstanding other considerations, it is mainly by her gun-power that a ship is still classed; and the highest class of vessels, commonly known as battle-ships, differ from their inferiors mainly in that their guns are more to be dreaded. Not only is a battle-ship provided with guns of such power that they are warranted to pierce the armour of any ship to which she is likely to be opposed, but in order to keep her own guns in action,

notwithstanding the efforts of the enemy, most ponderous masses of armour are carried partly on and near the waterline to prevent the ship from sinking under the feet of the gunners, and partly for the direct protection of the guns and men working them. Although the term "armour-clad" is disappearing, still it forcibly expresses the main difference between the battle-ship and the cruiser: the former having, even if protective decks are included, some four times the weight of armour carried by the other. Besides having to carry the great weights which armour-piercing guns involve, other sacrifices have to be made to make the guns of a battle-ship more formidable. In order to fight in any weather they have to be raised to a great height above the water, often four times as high as the lower deck guns of our forefathers; this necessitates great beam and a lower speed.

Again, in order that these guns may be brought to bear over a large arc of the horizon, the freeboard forward and aft has had to be lowered, which diminishes to some extent the sea-keeping capacity of the ship. A new feature has recently been introduced in the battle-ship, namely, a secondary armament of Q.F. guns. It is only in the latest ships that it has been found possible to afford them much armour protection, and their offensive power therefore rests on a different basis to that of the heavy guns. These latter may be expected to continue in action over a long period, and, their gunners being well protected, the practice should be good, more especially as the effect of each round can be clearly seen, and the aim corrected accordingly. On the other hand, the Q.F. guns depend for success on the rapidity of their fire and the demoralisation which, if well directed, it is liable to cause in the unarmoured portion of the opposing ship. A modern battle-ship will fire from 100 to 150 rounds from Q.F. ordnance for one from her heavy guns. About a quarter of these will be from 5-inch to 6-inch guns, the remainder from 3 to 12-pounders, so that the weight of metal discharged in a minute will, at the commencement of an action, be from twice to thrice as great from the light and medium guns as from the heavy guns. Whether the weight of metal that hits will be in the same proportion will depend greatly on the morale, discipline, and skill of the large number of men manning and supplying ammunition to the comparatively unprotected light guns, and to the control exercised by the officers over the accuracy of the fire. The heavier Q.F. guns, such as the 6-inch, will, if they use shot, riddle such protection as has hitherto been afforded to the secondary armament, but the most important Q.F. guns in the latest battle-ships are already being protected in such a way as to give security to the gunners against 12-pounder projectiles and also against 6-inch shell. The advantage of stopping seven projectiles out of ten that hit, and forcing your opponent's guns to fire shot instead of shell is so obvious that it seems inevitable that battle-ships will be liable to be burdened with yet more armour for the protection of guns and gunners. This will tend to make the gun even more than it is at present the principal weapon of a battle-ship.

As the number of guns in a ship increases so does the weight of broad-side fire tend to increase as compared with end-on fire, from the simple fact

that it is easy to arrange a number of guns to fire from the broadside of a ship 380 feet long, whereas even if the beam is as much as 75 feet it is less than one-fifth of the broadside ; and, however pretty it may look on paper, guns cannot be fired if placed one behind the other, so as to fire close past or over those in front of them. Therefore, notwithstanding all efforts to obtain end-on fire, an average fleet of present-day battle-ships is still very much more powerful on the broadside than end on ; and despite the advent of torpedo and ram, those who have had the control of the most recent designs have unmistakably deferred to the gun as if it was the principal weapon. Although as regards broadside fire greatly predominating in volume over end-on fire we are reverting to the practice of our ancestors, still it must not be forgotten that end-on fire has been made extremely powerful, especially as regards the heavy guns, which owing to their armoured defences are likely to remain in action when the lighter guns have been silenced ; so that though a ship of the present day cannot present her bow to another's broadside with any hope of success, there may be very hard fighting when ships or fleets are chasing each other. Nearly all ships are weaker as regards gun fire from half a point to three points on the bow and quarter than anywhere else.

Cruisers differ from battle-ships mainly in the absence of armour-protection for the heavy guns, and in carrying less armour on the water-line. The heavy armour-piercing weapons are replaced by a smaller number of moderate-sized guns on poop and forecastle, commonly two in lieu of four in the first-class cruisers ; and in smaller cruisers guns for armour piercing or smashing are altogether abandoned. Far more than in a battle-ship, the strength of a cruiser lies mainly in the broadside, and this is most markedly the case in our own ships, especially with those built under the Naval Defence Act. As regards offensive power, the number of guns firing ahead and astern is commonly only half what it is in a battle-ship, and there are no fighting tops,¹ which so greatly add to the volume of quick-firing gun-fire in line with the keel. Such armour as is given to the guns is wholly disposed on the broadside (the "Impérieuse" and "Warspite" remain alone in having protected chase guns), and it therefore follows that, towards the close of an action especially, a cruiser's end-on fire would be very feeble. The absence of anything to stop a heavy projectile raking the ship would make it most hazardous for a cruiser to approach a battle-ship bows on, or to allow one to place herself astern. The accounts of the action off the Yalu River are most confusing, but it looks as if the Chinese battle-ships escaped owing to the Japanese cruisers being afraid to expose themselves bows on to their stern fire.

Both battle-ships and cruisers are armed with torpedoes, but, as I shall show later on when dealing more at length with torpedo tactics, it is difficult to point to any system governing the positions and training of a ship's torpedoes. In our own Service, right-ahead tubes are to be found only in the second and third class cruisers and in torpedo gun-

¹ Tops have been introduced into some of the latest cruisers since this was written.

boats. Abroad, many battle-ships have right-ahead tubes; this is especially the case in Germany and Russia, and to a less extent in France and Italy, whilst nearly all the cruisers in these countries have fittings for firing ahead. Nearly all ships can fire torpedoes on the beam, or nearly so; in many cases these torpedoes train within 20° to 30° of the fore and aft line. In some few ships all the torpedoes are fixed on definite bearings. Stern tubes are almost always to be found in modern ships, whose quarter torpedoes are not fitted to train far aft. No ship has more than seven torpedo-tubes, whilst six and four are the commonest numbers carried. Battle-ships usually have the higher number and cruisers the smaller, whilst torpedo gun-boats, catchers, and torpedo-boats have from two to five discharges. As a rule no protection is given to torpedo-tubes, but a few ships now have submerged torpedo-discharges. It is quite possible, therefore, that a battle-ship's torpedoes may be disabled, whilst her protected guns still remain in action. In a cruiser, guns and torpedo-tubes all stand on the same level as regards protection, that is to say, with one or two exceptions in the case of the latest cruisers, all are alike unprotected.

In all modern ships the fore part of the armoured deck is continued down to the stem at some distance below water to strengthen the Ram. Thus cruisers, as well as battle-ships, can be used as rams if required. The efficiency of the ram in action depends on the engines, steering gear, and the telegraphs or other communications from the conning position being not only intact but in thorough working order. With regard to the engines they may be relied on with considerable, if not absolute, certainty. Few if any instances are on record of the engines failing at a critical moment, but the steering gear is far less to be relied on. Not only are there many instances of its breakdown under ordinary stresses in peace manœuvres, but the series of shafts from the wheel in the conning-tower to the steering engine are often insufficiently protected. The communications with the engine-room in the form of telegraphs are also liable to damage, so that a heavy projectile striking the conning-tower itself or passing just under it and damaging the communications may turn what would have been a successful ramming attack into a disastrous failure, involving the destruction of the attacking ship by the ram or torpedo of her would-be victim. The common impression that by turning her stern to the enemy a modern ship exposes her steering gear and propellers to injury from gun fire is a mistaken one. At the stern both steering gear and propellers are so deeply immersed as to run no risk from gun fire; the steering engine is also further protected from shell splinters by the armoured deck. It is from abeam and ahead that the efficiency of the control over steering and motive power is most seriously threatened, for it is from these directions that the conning-tower and its communications are most liable to attack. It is obvious, therefore, that when engaged in a ramming attack or when avoiding a ram a heavy fire should be concentrated on the conning-tower. A cruiser's weakness as a ram is more closely connected with the inferior protection to the conning station and communications than to any weakness of the ram itself.

Neither the smaller cruisers nor the torpedo craft have sufficient

strength to make a ramming attack advisable unless engaged with a ship of their own size. Not only is the steering gear poorly protected, but the engines also in the smaller craft are well above water; and the penalty of a failure to ram being so heavy, it is unlikely that ramming tactics will often be indulged in by vessels of this type.

Having formed some idea of the types of ships ready to hand and their armament, let us now examine more closely the various offensive weapons with the view of discovering their powers and limitations, which must necessarily exercise very considerable influence on the tactics best adapted to bringing the weapons into play.

POWERS AND LIMITATIONS OF THE GUN.

The tendency of many, if not of most, of the improvements in modern weapons, is to give them an increased effect at long ranges, so that the user of the modern improved weapon may be in a position to inflict much damage on an opponent at ranges at which the older, and therefore inferior, weapons of the latter are powerless.

Put a modern third-class cruiser in the position of the "Shannon" within less than 100 yards of the "Chesapeake," and I should not be surprised to find that she had more than met her match. But at 1,000 or 1,500 yards the modern cruiser would knock the "Chesapeake" to pieces without much risk to herself. Artillery tactics have always consisted in withdrawing to such a distance that the shorter-ranged weapons to which you may be opposed are nearly harmless, whilst your own guns are still effective. Just as on shore the field-gun gives way to the rifle at 1,000 yards or so, and the latter to the bayonet at close quarters, so the ship's gun will lose much of its ascendancy at those ranges where the torpedo is paramount, and both may have at the closest contact to yield first place to the Ram.

It is most necessary, therefore, to form some conclusion as to the ranges at which the gun may be considered effective. Actual experiment has shown that a gun mounted on shore, with facilities for range-finding and observing the effect of its fire, would hit a ship with great frequency at 8,000 yards range. But nothing of this kind can be expected from a ship. Under the most favourable conditions of peace practice, the range being accurately known, and the ship as a rule steady, the hits on a target 15 feet high at 1,500 yards are about one in three. With similar accuracy, it might be worth while to open fire at a large ship broadside on, some 30 feet out of the water, at 3,000 yards, and on a cruiser with 15 to 20 feet freeboard, at 2,000 yards. In a chase, the gun is in the most favourable position possible. Not only does the length of the ship greatly add to the virtual target, but the range varies only very slowly and regularly. Under these circumstances it might be worth while to open fire at 5,000 yards with heavy guns, but it is useless firing any gun which is not heavy enough to make it apparent whether a hit or miss has been made, and thus to correct the fire.

With the smaller Q.F. guns, it may be necessary to restrict the fire to one or two guns only (which would thus get an opportunity of observing

and correcting their fire) until 2,000 yards was reached, when in fairly smooth water a good deal of execution should be done. At these long ranges it would be impossible to so direct the fire as to have any reasonable hope of placing the hits where required; all guns should, therefore, load with shell in the hope of hitting an unarmoured part of the enemy. Only at close ranges, or when fighting a ship extensively armour-plated, as are some old-fashioned battle-ships, would it be advisable to use shot.

If the limit of torpedo range be put at 600 yards¹ the gun then reigns supreme from 3,000 to 600 yards, and it is naturally the object of a ship that trusts to her guns to keep her opponent within that zone. Moreover, since, as was shown above, the broadside fire of a ship is more powerful than her end-on fire, it will be the object of the ship that trusts to her guns to bring her broadside to bear. Again, since changes of distance make hitting difficult, the gunner will strive to keep the distance constant. All this he can do with the greatest readiness if he has sufficient speed.

The speed required may be deduced from the following table:—

TABLE I.
Rate of Opening or Closing according to Speed of Ship and Bearing of Object.

Bearing of Object measured in points from Keel line.	Rate of Opening or Closing at undermentioned Speeds.					
	10 knots	12 knots	14 knots	16 knots	18 knots	20 knots
Points	knots	knots	knots	knots	knots	knots
1	9·8	11·8	13·7	15·7	17·6	19·6
2	9·2	11·1	13·0	14·8	16·6	18·5
3	8·3	10·0	11·8	13·3	15·0	16·6
4	7·1	8·5	9·9	11·3	12·7	14·1
5	5·6	6·7	7·8	8·9	10·0	11·1
6	3·8	4·6	5·4	6·2	7·0	7·7
7	2·0	2·3	2·7	3·1	3·5	3·9
8	0·0	0·0	0·0	0·0	0·0	0·0

For example, suppose a ship of 18 knots speed X desires to engage a 15-knot ship A at 1,200 yards, keeping her broadside bearing, the arc of training of the broadside guns being 5 points before and abaft the beam. Her opponent, on the other hand, as she cannot escape would rather fight end on, or use ram and torpedoes. X chases A, gaining 100 yards a minute, and takes 38 minutes to close from 5,000 to 1,200 yards. It is, of course, during the chase that A's opportunity occurs to bring her end-on fire into play. During the last eighteen minutes whilst X is closing from 3,000 to 1,200 yards, the latter if weak in end-on fire will suffer heavily, but at 1,200 yards she alters course 3 points and brings her broadside to bear.

If A continues to steam straight away from her, altering course as X

¹ As is shown at page 63, it is possible to be hit by a torpedo, which can only run 600 yards, without approaching nearer than 1,000 yards to the ship that fires it. Still, as an approximation, the practical limit of torpedo range may be put at 600 yards.

gets on her quarter, X has only to alter course so as to keep A 3 points on her bow. The two ships will now run round concentric circles as depicted in Diagram I., Fig. 1, X's broadside being opposed to A's stern guns. If A instead of keeping X astern steams straight ahead, X will gradually draw forward on her quarter and will successively occupy the three positions depicted in Figs. 2, 3, 4. In Fig. 2, X is 3 points on A's quarter, therefore A is opening from her at 12·5 knots; but A is 4½ points on X's bow, so that the latter is closing at 12·5 knots; the distance is, in fact, constant. In Fig. 3, the angles are 7 points and 7½ points, the relative rates of opening and closing being 2·9 knots, and distance 1,200 yards as before. In Fig. 4, the angles are 5 points and 5½ points, the relative rates of opening and closing being 8·4 knots. Distance 1,200 yards. X has only to alter her helm so as to keep A's distance as recorded by masthead angle invariable, keeping away a little if she closes and turning towards her if she opens, and A can do nothing to prevent her. She may stop if she likes, when X simply circles round her; she may put her helm hard over, when X follows suit, but turning on a slightly larger or smaller circle, as the case may require. (See Fig. 5, where A has X 2 points on her bow.) If she turns away as at A₁ A₂, X keeps the distance invariable by turning as shown X₁ X₂. If A turns towards X, the latter will at first overrun her distance, and at X₃ is about 1,350 yards from A₃. But this is only momentary, for about one minute afterwards at X₄, X has regained her station 1,200 yards from A.

Speed then enables a ship to choose her range, which she can keep constant or vary at pleasure. On the other hand, however fast a ship may be, a slower opponent can always turn fast enough to prevent the bearing remaining constant, so that it is impossible for a fast ship to say "I will place myself on my opponent's bow or quarter." (See Diagram II., Fig. 1.) Here X, a 15-knot ship, turns on a circle with a diameter of 550 yards, a fair average of handiness. If B be 500 yards on X's beam and desires to maintain that position, she will have to turn on a circle with some 1,500 yards diameter in the same time that X traverses her 550-yard circle. To do this her speed must be at least 40 knots! If she desired to keep 500 yards ahead of X, as at A, her speed must be 27 knots. Obviously the further apart the ships are, the faster the outer ship has to go, and it is quite impossible within the limits of speed that fighting-ships possess to find one fast enough to keep on a constant bearing from even the slowest and least handy ship. Each ship in a gunnery duel can therefore select the bearing on which she wishes the enemy to be, and can keep her on that bearing. For if the line joining the two ships in Diagrams I. and II. be converted into a rigid bar 1,200 yards long attached to one of them; if this ship puts her helm over, and turns at the rate of 1° per second—a moderate rate for a battle-ship, and a slow one for a cruiser—the extremity of this bar will travel at over 50 knots speed, and may therefore be relied on to overhaul the fastest ship in a very short time. But if the bearing on which it is desired to keep the enemy entails a rapid rate of opening or closing which is not compensated for by the movements of the latter, then the action will either have to be discontinued owing to the ships getting

out of range, or the ships will pass into the zone dominated by ram and torpedo, and it will cease to be a gun action alone. For example, take two vessels steering as are X and A₂ in Diagram I., Fig. 5. A₂ is 3 points on X's quarter, and X is 4 points on A₂'s quarter. By Table I., X at 18 knots opens A₂ 15 knots per hour, whilst A₂ steaming 15 recedes from X at 10·6 knots. The two ships are therefore receding from each other at 25·6 knots or 850 yards per minute, and in two minutes or so they will be out of range. Similarly, if two ships decide to keep each other mutually on the bow, they will collide or pass each other close to in a very short period. Since however, the end-on fire of even the latest much besponsoned ship is greatly inferior to her broadside fire, the rule will be in a gunnery duel to turn so as to bring the broadside to bear, as in Figs. 2 and 3, Diagram I., and a broadside to broadside fight much in the good old-fashioned style will take place.

If one of the opponents has a larger arc of training for her guns and better training gear, it may be to her advantage to twist about as in Fig. 5, for in this case X, if she does not turn as A does, will so increase her distance as to drop out of range. She may, of course, if her training gear works badly, turn with easy helm, when her distance will somewhat increase, but her guns will get a better chance during the turn, and she can make up the lost distance when round if she has the speed. Whilst, therefore, a slow ship cannot prevent a faster opponent from remaining at such a range that the fight becomes one for guns only, and the latter can also select her distance and never vary it, the slow ship, however unhandy, can always turn fast enough to bring the guns she wishes to use into bearing; and although she cannot force her opponent to vary her range unless her circle is very much smaller, she can make her, in order to maintain her position, turn in such a way as may be inconvenient to the working of her guns.

The advantage of a high speed is most marked : it not only gives a ship the choice of whether she will fight or not, but it also gives her choice of weapons, and even with the gun it confers other advantages. Thus a chasing ship, if of superior speed, can not only yaw so as to bring her broadside to bear without unduly losing ground, but she never need present herself end on to the enemy, even when the latter is pointing directly away or towards her. An example will best explain this : suppose one of our battle-ships with a pair of guns forward and aft to be engaging one whose guns are arranged on the French system with one gun ahead and astern and one on each broadside. When the ships are abreast each other, or nearly so, as in Fig. 2, Diagram II., E, the English-built ship, has the advantage, as all her heavy guns bear, whilst only three of her opponent's will do so. The latter, F in the diagram, might now turn towards the former with the view of opposing her three guns which fire ahead to the two guns of the English vessel which bear aft. Now, if the English ship desires to keep her distance, she need only turn till she is going away from the French ship as fast as the latter gains on her. She, therefore, brings the French ship 2 $\frac{1}{4}$ points on her quarter, and gets her broadside secondary armament to bear whilst the ships are

keeping their distance. The English ship could even with advantage increase the yaw enough to fire her foremost heavy guns. (See E, 4 and 5.) She would then, whilst they were loading, turn her stern to the enemy and regain her distance. I fear that my proposal to turn away from an enemy will meet with but scant approval in some quarters. I have before pointed out that the risk to rudder or screw from shot is nil in a modern ship with protective deck. There is also this decided advantage that the leader in a chase chooses the course, and will naturally select one which will place the ship head to sea. Under these circumstances his opponent's bow guns will be hampered by spray, whilst his own stern guns will be unaffected by the sea. Even if the leader in a chase be a slow ship, her torpedo fire aft is so strong that she would in most cases be, in my opinion, fully justified in standing on even with her opponent coming up fast astern. But if a slow ship should object to a faster opponent coming up under her stern, there is only one course open —she must turn in good time run straight at her opponent, and the two ships will meet stem to stem and the fight will be settled by ram or torpedoes. This brings me to the very practical question in the present day of how best to engage in a slow ship with a good gun armament but without torpedoes. We have a large number of such craft scattered over the world at this time, manned by some thousands of our best men, and it is imperative that we should know how to use them in action.

Owing to the poor speed of these ships it must be assumed that it is the enemy that elects to fight, that is to say, she considers herself the stronger ship. If otherwise, she would simply use her speed to steam away. At the same time, unless the slow ship is superior in a gunnery duel there could be no fight at all, for the ship with superior speed and superior gun fire would simply steam up to within 1,000 yards or so of her opponent and smash her to pieces from that range, being most careful not to get closer, lest her despised enemy might have somehow provided herself with a torpedo. But the attacking ship might imagine that she was superior in gun fire, and find that she had caught a Tartar. In any case the fight should be begun by the slow ship bringing her broadside to bear with all her guns traversed on the fighting side, for it is most important for her to make her shell tell as early as possible.

The type of ship which I am contemplating is, in some cases, well provided with stern fire. If superior to her adversary in this respect she should at first give her a stern chase head to sea, or if not strong in stern chasers she should get her on her quarter with her broadside just bearing. If her adversary manifests a settled determination to close, coming straight at her, it then becomes a question whether she should continue her retreat or turn in the hope of ramming her fast opponent when the latter tries to use her torpedoes. No diagram is required to illustrate the first type of action. If S, the slow ship, goes 12 knots, and her opponent 15, and the latter keeps resolutely stem on to the former, whilst she in her turn with guns trained 5 points abaft the beam keeps them all bearing, the two ships will take ten minutes in closing from 2,000 to 350 yards.

S must now present her stern to the chasing ship, who may, if she pleases, try to ram S in the stern, but this though possible enough on paper does not seem to have ever been actually accomplished in actual fighting. S, of course, depends entirely on the accuracy and superiority of her fire to beat off her opponent. She must at all hazards disable the right-ahead torpedo-tube, and must have every machine gun and rifle that can possibly be brought to bear placed on the quarter which she desires to turn to the enemy so as to cripple him before he gets close to. The alternative is to stand on only so far as will give room to turn on F, the fast opponent, and then to put the helm hard over with the view of ramming or of passing her so closely as to render her torpedoes useless. The question is, What is the latest moment at which the turn can be safely made? Diagram III. shows the disastrous result of standing on too long before turning. F's task is a very simple one in this instance. Her antagonist has let her close to within twice the diameter of her turning circle, because with this lead she can get her head round in the direction of F's original position before the latter can reach her. But this makes no allowance for F's movements. The latter directly she sees that S is turning, steers for about the centre of her circle, and alters her helm as necessary to pass within easy torpedo range of S (see 7. 7. and 9. 9. respectively), and fires three torpedoes as she passes, about two minutes after the helm was put over. It makes little or no difference which way S puts her helm, the result is the same, for F gets inside her circle where S cannot touch her. If S thinks better of it when she has got as far as 6 and reverses her helm (see the dotted track) she certainly escapes her enemy's torpedoes, but the latter is in her wake and close to, and the only result of the manœuvre is to let her enemy come right up under her stern without subjecting her to any serious fire, for the rounds fired with helm hard over are likely to be worth little or nothing.

S must therefore turn soon enough to prevent F crossing into her circle. Diagram IV. shows the effect of turning when S has a lead of $3\frac{1}{2}$ times the diameter of her turning circle, and the figures in brackets represent the position if she is $4\frac{1}{2}$ diameters ahead when she turns. Taking, first, the plain figures, where F steers as in F_b, F_c making for the centre of S's circle, it will be seen that F has very little difficulty in crossing S's bows and passing her close to on the side towards which she has been turning. It must not be forgotten that in turning 20 points or more S's speed is greatly reduced, viz., by about $\frac{1}{3}$, so that it may be taken roughly as 9 knots in lieu of 12.5. Thus she is reduced to this very slow speed, whilst her adversary maintains her 15. It is true that at 8, or thereabouts, S gets her ram pointed at F. But the latter moving her full 15 knots stands across S's bows with ease and safety, and, choosing her distance, discharges her torpedoes at close range. (See F_b, F_c, with torpedo tracks b₁, b₂, b₃, c₁, c₂, c₃.) If S has yet more start, viz., $4\frac{1}{2}$ diameters of her circle, so that the figures in brackets show F's contemporaneous positions, although F has not quite got things her own way, still she has far the best of the game. Taking first the case on the right of the diagram S_a, F(a), where S turns towards F. Here at 9 she steadies her

helm in the hope of ramming F. This she would do at 12 (12) if F stands on, and if her bow torpedo (*a*)₁ misses. But if F turns away with helm hard over as at F(*d*) or F(*e*), she clears S's bow and torpedoes her as the latter crosses her stern. See torpedo tracks (*d*)₁, (*d*)₂, (*e*)₁, (*e*)₂, (*e*)₃. In this instance S will have regained some of her lost speed, whilst F will lose a little by putting her helm over, but she will still have an advantage of 3 to 4 knots, which should enable her to clear her opponent without much risk. F would have been quite safe had she steered as at F(*e*), but she may think it worth while to risk shaving S as at F(*d*), in order to be certain that she will pass within close torpedo range, for if S reversed her helm at 8 as at S_c, directly she saw F(*e*) alter course to port, the latter would not get such a good chance with her torpedoes. Still even here she gets two shots at 300 yards range, viz., (*e*)₁, (*e*)₂. The encounter to the left of the diagram is of the same character. If F plays for safety (see F(*d*)—S_d, or F(*e*)—S_e), she can get a fair chance with her torpedoes, viz., (*d*)₁, (*d*)₂, (*d*)₃, the range being under 300 yards, without giving S the shade of a chance of ramming. If she determines to pass so close that her torpedoes cannot miss, as at F(*d*)—S_e, torpedoes (*d*')₁, (*d*')₂, (*d*')₃, range 100 yards, a bad mistake may be fatal to her. Still, the odds that she will not be rammed are greatly in her favour. Speed rules the roast. S may be very handy, but she gets but little advantage from it.

This problem is one that can be worked at with great ease and little or no risk by any ship when at torpedo practice. A target boat should be sent ahead to represent S, the ship herself taking the *rôle* of F, who has to avoid S's ram and torpedo her. The boat would, of course, need to have her turning power limited to such an extent that she would turn in about the same space as a very handy ship. This can be arranged for with no difficulty by attaching an iron plate to the boat's keel near the stern, and by limiting her helm angle to 5° or so. The boat has this advantage over the ship she represents that she does not lose her way in turning, because her length enables her to run round the big circle with little or no loss of speed.

It would seem, therefore, from the above, that with the speeds of 15 and 12·5 respectively, a fast ship has an excellent chance of torpedoing a slow ship, even if the latter turns to meet her in good time. With the speeds mentioned, which are as 5 to 6, the slow ship must have a lead of 4½ times the diameter of her own turning circle in order to have ample room; or whatever her speed, the diagram shows that she must have sufficient time to turn a complete circle or 32 points, whilst her opponent is traversing the space that separates them. There are but few ships that turn a circle in four minutes, and many take as much as six minutes. One of the former, if chased by a ship of 15 knots speed, must turn when 2,000 yards from her, and one of the latter at 3,000 yards.

Under these circumstances, I cannot believe that it is desirable for a slow ship to turn to meet her opponent as described. It may seem pusillanimous to turn away, but it appears to be the best thing that a slow ship armed with good guns can do; and if she has only a single torpedo

which can be directed on the quarter or aft, the reasons for turning her stern to the enemy are greatly increased in cogency, as will be shown later on. By turning to meet the enemy the guns are in great measure rendered useless, for not only does the bearing alter extremely fast as the ship spins round, but the distance also alters at such a rate that good practice is out of the question. Thus the torpedo-vessel gets to close range without having been subjected to any serious fire.

I am, therefore, strongly of opinion that great changes of distance and bearing are not likely to be the normal conditions of a gunnery duel, but that on the other hand the tendency will be to keep both bearing and distance constant.

There are three methods of fighting an action when bearing and distance remain constant :—

1. When broadside fights broadside.
2. When bow guns engage quarter guns.
3. When bow chasers engage stern chasers.

In all cases the choice of the range rests with the fastest ship, the question of the bearing depends on the mutual action of the two ships ; each is more or less dependent on the other. If two ships desire to fight out an action with guns it is probable that they will fight broadside to broadside, since the largest number of guns are thus brought to bear, and both bearing and distance remain constant. If one opponent objects to a broadside duel, she has two alternatives :—

- a. To turn towards her adversary to use her bow guns.
- b. To turn away from her to use her stern guns.

Both *a* and *b* are disadvantageous to a slow ship, for her faster opponent will be able to yaw, and bring her broadside to bear, thus crushing the fire of the chase guns by the weight of her broadside. Hence a slow ship must mainly trust to her broadside ; but a fast ship by persistently following a slow one may force the latter to turn her stern, so that it is also most important for a slow ship to have a heavy stern fire.

A fast ship, with good end-on fire, turning towards her slower opponent will almost certainly find her bow chasers confronted by the latter's broadside. She will, therefore, push into close quarters when the slow ship will have to turn away trusting to her torpedoes and stern chase guns.

A fast ship will effect nothing by turning away unless her opponent puts undue confidence in the power of her bow chase guns, for the slow ship, when her fast opponent turns her stern, will present her broadside till the ships are out of range of each other, and when the fast ship wishes to resume her action she will find her bow chase guns confronted by her opponent's broadside. For a fast ship, therefore, a heavy bow fire is as important or somewhat more so than a heavy stern fire, since high speed and a powerful set of bow chasers work together in bringing to book an unwilling antagonist. Any ship can always say to an opponent, "You shall fight my stern chasers or let me go." Or again, "Unless you elect to fight my bow chasers the action will be decided at close

quarters with ram and torpedo, or by broadside fire when passing close to on opposite courses."

Only a fast ship can keep her broadside bearing, whatever happens. It is most important that these broadside guns should have a large arc of training. Under certain circumstances an extra 10° training is worth from 2 to 3 knots in speed.

Turning power is worth very little in a fight with guns. Its only use is to enable a ship to twist about so quickly as to make the practice with guns difficult, but she herself suffers as much or more than her opponent. Speed, on the other hand, is all-important. Indeed, so important is it, that it appears almost inevitable that a consideration of gunnery tactics must lead to the classification of the opponents under the heading of Fast and Slow, these being far the most important characteristics in determining the tactics to be followed. Now as ever the weight of the broadside is also important, and it is, therefore, highly desirable that chase guns should be capable of being trained abeam. A slow ship must have powerful stern fire reinforced by torpedoes, or she is helpless. Such ships as "Conqueror," "Hero," "Rupert," and "Hotspur" appear to be practically indefensible under modern conditions of attack. Although for scouting work in the presence of a superior force good stern fire is necessary in a fast cruiser, for a gunnery duel it is not so essential when a ship is much faster than her enemy.

The importance of good end-on fire in the chase which will very commonly form the commencement of a gunnery duel cannot be overrated, but once the battle is fairly joined, the two all-important factors are Speed and Broadside Fire.

There are three factors which govern the probability of hitting in a gunnery encounter. They are:—

1. The range, with which is closely allied the size of target.
2. The rate of variation of the range.
3. The rate of variation of the bearing.

Now the range is the same for both opponents, as is also the variation of the range, but the rate of variation of the bearing depends mainly on the rate at which each ship turns under the influence of helm. Evidently, therefore, the use of a great deal of helm tends to place the ship using it at a disadvantage.

With regard to 1 and 2, the fastest ship chooses the range, and unless extremely unhandy, as compared with her opponent, she chooses whether the range varies or not. But the slowest ship can make the range nearly constant by turning away.

Hence either ship can, if she is not afraid to turn away, make the range constant, or nearly so, if she pleases; but neither can force the other into an action in which the distance changes rapidly, unless indeed the ship which desires the range to be constant is afraid to turn away, or, which is the same thing, the slower ship is afraid to let her faster opponent take up a position under her stern.

Either ship can keep the other on a constant bearing as long as the range is greater than from one-half to once the diameter of her turning

circle, but if the mutual bearings selected by the two ships entail a rapid alteration of distance, the action will either cease through the ships getting out of range, or they will come so close that the angular movement, due to the action of the helm, is no longer sufficient to balance the change of bearing due to the combined speed of the two ships. This does not happen till the ships have closed to a distance of half the diameter of the turning circle, when the ships are crossing at right angles, and at twice this distance when passing on opposite tacks. Ships as close as this are well within torpedo range, therefore it can no longer be considered a gunnery encounter.

POWERS AND LIMITATIONS OF THE TORPEDO.

Before considering the Tactics best suited for developing the powers of the Torpedo, a word of explanation is necessary as to why I have given the Torpedo precedence of the Ram. I have done this deliberately, because I consider that the torpedo is the more formidable weapon of the two. The ram and torpedo may be looked upon alike as projectiles, causing about the same amount of damage on impact, but the ram has this great disadvantage, that it drags the attacking ship in its wake, and a very small mistake will put her in the greatest danger. Moreover, the ram is fixed in one direction, viz., right ahead, which greatly limits its powers of attack as compared with the torpedo, which can be directed on almost any bearing.

But it will be urged on behalf of the ram that it can be directed up to the moment of impact; whereas, once it is discharged, the direction of the torpedo is fixed.

But before and up to the moment of discharge, the direction of the torpedo can be altered faster than that of the ram, and where several torpedo-tubes are fitted, if one will not bear, another will. Moreover, the speed of the torpedo being so much greater than the speed of the ram, there is not so much need to alter its direction to meet some alteration in the course and speed of the enemy as in the case of the ram. With regard to the question of avoidance, it is not easy to make out with the necessary exactness how a hostile ram is steering, but this difficulty is very greatly accentuated in the case of the torpedo, whose track is not, as a rule, apparent till it is too late to do anything. It is true that, as mounted in most of the ships now existing, the torpedo is much more liable to be disabled by gun-fire than is the ram; but this only applies to above-water discharges, and a ship with steering gear or engines disabled can still use her torpedoes, whilst her ram is harmless. If a ship be well armed with torpedoes, it is most difficult, if not impossible, to ram her without laying yourself open to torpedo attack, whereas it is a very simple matter to torpedo an adversary without giving him a shadow of a chance with the ram.

It is of great assistance, in considering how best to use the torpedo, to have a clear idea of the bearings on which these projectiles can be discharged with the greatest advantage, and also the limit to their range. This is not quite such a simple matter as it might appear. A gun trained

on the beam threatens an opponent on that bearing, but a torpedo pointed straight at him in a similar way would, if fired, pass a long distance astern. It must never be forgotten that a torpedo is not laid at the ship it is desired to hit, but at the point which the centre of the ship will reach when the torpedo comes up. Since the speed of modern torpedoes varies from 26 to 30 knots, I shall consider that the speed of a torpedo is about $\frac{2}{3}$ of that of the ship attacked. Thus, a torpedo with 500 yards to run is directed 300 yards ahead of the ship attacked, and at the moment it strikes the torpedo seems to have come not from the ship that fired it but from a spot 300 yards astern of her. In an encounter with torpedoes, each of the opponents may be considered to have ahead of her a dummy ship, which is her enemy's target, and astern of her another dummy, which retaliates on the enemy. It is, therefore, of the utmost importance to lengthen the range between the enemy and the dummy ahead, and to shorten it between her and the dummy astern, which is done by the simple expedient of turning your stern to the enemy.

Diagram V. shows the direction in which a ship threatens another with her torpedoes. A represents the position of a ship at any given moment; her speed is 18 knots and speed of torpedoes 30 knots; the diagram would also apply to torpedoes of 25 knots and a ship of 15 knots. Her torpedoes are trained as under:—

Ahead.
70° before.
Abeam (Submerged Torpedo).
70° abaft.
Astern.

The heavy red lines show the directions in which torpedoes trained on these bearings threaten an enemy. For example, take an enemy at B₄. She, though on A's quarter, is threatened by the submerged torpedo, which leaves the ship in almost a direct line from its tube which is trained abeam (the deflection being 3° the exact line of attack is 3° abaft). But B₄ is 600 yards from A's track, so that looking at the two ships as they are depicted on the diagram at the moment the torpedo strikes B₄ it is seen that the torpedo comes apparently not from A, but from A VI., a dummy A just so far astern of her as A can run in 600 yards. As a matter of fact, A discharged her submerged torpedo at A VI., which running along the thin line depicted strikes B₄ at 6, after a run of 600 yards. B₄ at the time she is struck is 750 yards from A, and 3 points abaft her beam. Had she been at 4 she would have been struck by a torpedo fired from A IV. range 400 yards, and wherever she may be on the line 3 points abaft A's beam she is liable to be hit by the submerged torpedo, which if it has an extreme range of 800 yards will strike an opponent 980 yards from A. Similarly, it is seen that the quarter torpedo trained 70° abaft has a line of attack 7 points abaft, and an extreme range for an 800-yard run of 1,300 yards, and 975 yards for a 600-yard run. It is thus seen that torpedoes fired on or near the beam or abaft it are liable to have their apparent range increased, and that a ship that never approaches her enemy nearer than 975 yards is liable to be struck by a torpedo whose extreme range is 600 yards. On the other hand, the

apparent range of torpedoes fired on the bow is greatly reduced, and their line of attack is also deflected aft to an important extent. A fires a torpedo 70° before the beam, and with 8° deflection. The torpedo thus leaves the ship pointing 28° on the bow, or $5\frac{1}{2}$ points before the beam; but its line of attack, as shown by the diagram, is only 3 points before, and the extreme distance from the ship after an 800-yard run is only 480 yards. Similarly, the right-ahead torpedo is but 375 yards from the ship after running 800 yards, and but three-quarters of this distance, or 280 yards, after a 600-yard run. So that if the torpedo has an extreme range of 600 yards it by no means follows that you are safe outside this range. Remember that it is not the ship you see that you have to fear, but a dummy astern of her; A VI. being the dummy in question for a 600 yards torpedo. Now, if your head is in such a direction that this dummy is before your beam, you thereby shorten the range of the torpedo. B_3 , B_4 , B_5 , have all committed this error. B_1 , on the other hand, though nearer A than either B_4 or B_5 having got her stern turned to A and all her dummies, is perfectly safe. Moreover, she is in an excellent position for attacking A, with torpedoes, whereas B_4 and B_5 have no chance at all.

But although A's bow and right-ahead torpedoes have their range greatly shortened, they cover a large otherwise undefended area. With only beam and quarter torpedo fire A would be hopelessly weak, for if a ship never got more than $2\frac{1}{2}$ points abaft her beam she would be safe. B_2 , for example, would be safe where she is depicted, and if she could avoid crossing the line of A's submerged torpedo she would have an excellent chance of torpedoing A without getting a shot in return. As a matter of fact, if steering as depicted, she cannot avoid crossing the fatal line, but she might have crossed A's bows without going near it.

As regards torpedo attack, therefore, a ship is like a scorpion, her sting is in her tail, and it is to a considerable extent a flexible one, the helm giving even a ship with fixed torpedo-tubes considerable striking power laterally. To depict this in the diagram we should have to put a string of firing dummies on A's quarters, which would unduly complicate and confuse the plan.

But if A be a ship of any size (and all recent experience goes to prove that a vessel must be of considerable size to maintain a high speed under service conditions, so that even a torpedo-catcher presents a fair torpedo target), she must expect when she goes torpedoing to be paid back in the same coin; and this brings us to a consideration of the black dummies and curves on the diagram. If it is desired to assail A with a 200 yards torpedo we must start the Whitehead in the direction that A will be in when the torpedo has run 200 yards. The dummy marked A II. shows this position. Now, with the midship point of A II. as a centre, we describe a circle with 200 yards radius. Then our enemy must fire a torpedo from this circle if she wishes to get a 200-yard shot. Similarly the circles marked 4, 6, 8 respectively show whence torpedoes may be discharged to run 400, 600, and 800 yards, the targets being the dummies A IV., A VI., A VIII. in each case. Thus B_2 has a 200-yard shot, and as she is broad on A II.'s quarter, the length of the virtual

target is considerable, and she ought not to miss. B_1 also gets a good 400-yard shot at A IV. B_3 , if she has torpedoes running 800 yards, has a chance at about 650 yards, but her torpedo coming up as it does nearly right astern of A VI. has a small target, so that the shot is well-nigh a hopeless one. B_4 and B_5 are out of range, although both of them are liable to be hit by A. The black circles then indicate positions for attacking A, and I have styled them Attack Circles; the red circles, where A herself attacks, I have called Arcs of Torpedo Fire. It is evident, therefore, that to attack successfully without running a serious risk, it is necessary to get well on your opponent's bow. Only thus is it possible to get to close range, say inside circle 4, without getting into the Arc of Torpedo Fire. It will be observed that a line, styled the Neutral Line, has been drawn on either beam of A. Ships on this line, as is B_2 , will be on an equality with A as regards the range of their torpedoes. Ships ahead of this line like B_1 have the advantage, whilst ships astern of this line like B_3 are in a correspondingly bad position. Hence the rule that—*As regards Range: The ship that has the enemy more nearly right aft has the advantage.*

But, although in most instances the first consideration in order to hit is that the range may be short, the dimensions of the target are also of serious moment. When a ship is nine times her beam, as is the case with many of the smaller cruisers recently built, it makes all the difference in the world whether an end-on or a broadside shot is obtained, and even with a beamy battle-ship the angle which the torpedo's track makes with that of the enemy is of the greatest importance, as may be seen from the following table:—

TABLE II.

Table showing Size of Target presented when Torpedo attacks at different angles with the Keel.

Angle that Track of Torpedo makes with Course of Enemy.	Virtual Target.		
	Battle-ship 380 x 75 feet.	Cruiser 300 x 43 feet.	Torpedo Gun-boat 230 x 27 feet.
Degrees	Feet	Feet	Feet
0	75	43	27
5	75	43	27
10	75	52	40
15	98	78	60
20	130	103	79
25	161	127	97
30	190	150	115
35	218	172	132
40	244	193	148
45	269	212	163
50	291	230	176
55	311	246	188
60	329	260	199
65	344	272	208
70	357	282	216
75	367	290	222
80	374	295	227
85	379	299	229
90	380	300	230

It will be seen that up to 10° from the keel line the target is at its minimum. There is then a rapid increase, till at 45° it is about four times as great as at 10° . From 45° to the beam the target only increases 45 per cent., and looking at the great advantage obtained by keeping well before the beam, it seems scarcely advisable to attempt to get within 3 or 4 points of the beam. It must be remembered too that it is the dummy ahead of the enemy that is attacked, and if on the bow, like B_1 , in Diagram V., you get a better shot at the dummy than at the ship herself. Thus B_1 is 27° on A's bow, but her torpedo strikes her at A IV., 44° on the bow. If A then represents a battle-ship, we see that B_1 has a virtual target of 265 feet. At 400 yards range 265 feet subtends an angle of 13° , so that B_1 has a very good chance of hitting. The standard service target, which is hit seven times out of eight at target practice, subtends an angle of $11\frac{1}{2}^{\circ}$. Similarly B_2 attacking A II. about 60° from the keel line, at a range of 200 yards, has a virtual target 329 feet long, subtending an angle of 32° . B_3 attacks 17° on the quarter. Range, 650 yards; virtual target, 110 feet; angle, $3\frac{1}{4}^{\circ}$; a hopeless shot, and yet B_3 is barely half the distance from A that B_1 is, much of her failure being due to her oblique position. The angle of attack being thus so important, I have added to the diagram certain lines enclosing the Danger Area, which delimit a certain portion of the area enclosed within the Attack Circles. As before pointed out, although a torpedo fired from any point in circle 6 say, has the same range, viz., 600 yards, it is of the greatest importance to get well on the beam of the dummy A VI. to which the torpedoes are directed. The Danger Area, therefore, includes all the space whence a torpedo may be fired at a target subtending 10° . Two inner curves are added, showing the limits of the areas whence 15° and 20° shots may be obtained. A ship which allows an enemy to get within her Danger Area stands an excellent chance of being torpedoed, and it is therefore of the first importance to have the form and extent of this area thoroughly imprinted on the mind. For a battle-ship such as I have depicted, the Danger Area is formed by a pair of ellipses or ovals, each 900×600 yards, lying about 50° on either bow, and with the further edge 900 yards off. A line drawn 2 points abaft the beam passes out of the Danger Area at 260 yards range, and one drawn $\frac{1}{2}$ point on the bow at 300 yards range. On the beam this area extends 500 yards from the ship, and 2 points before the beam 750 yards, 4 points before 900 yards, and 6 points before 700 yards. This refers to the outer space within which the angle subtended by the target varies from 10° to 15° . The corresponding distances for the inner areas are half and three-quarters those for the outer one. Thus the "Royal Sovereign" may lay herself open to a 20° torpedo shot by approaching within 450 yards of an enemy. A fast ship in the position B'_1 would be able to fire her two quarter and right-aft torpedoes at A, which ship presents a target of such a size that it would seem almost impossible that all three torpedoes should miss her. B'_1 then putting on steam would quickly get out of range. If A ported her helm to bring her right-ahead torpedo to bear, it would not reach B'_1 ; nor would the bow torpedo if she starboarded. Her

best chance of escape would be in putting her helm hard to port, at the same time reversing her inner screw. B's torpedoes might possibly pass ahead, but seeing that they are laid at a dummy midway between A II. and A IV., only a clear three-quarters of a length ahead, A's chance of escape is but small, especially if B has aimed rather abaft her target's centre, as should always be done, because it is impossible in the short time that a torpedo takes to reach its mark to increase a ship's speed, whilst it is easy enough to decrease it.

I present here in tabular form particulars as to the Danger Area. Some may prefer to have a record of bearings and distances rather than a diagram, and it is above all things necessary that the tactician should have an accurate idea of the figure and dimensions of the space on each bow whence a torpedo attack is specially to be guarded against:—

TABLE III.
PARTICULARS AND DIMENSIONS OF DANGER AREA.
Table showing Distance of Edge of 10° Area from Ship attacked.

Battle-ship. 380 x 75 feet.		Torpedo Gun-boat. 230 x 27 feet.	
Bearing of Enemy when she fires her Torpedo, measured in Points.	Distance corresponding to angle of Target = 10°.	Bearing of Enemy when she fires her Torpedo, measured in Points.	Distance corresponding to angle of Target = 10°.
Ahead	Yards	Ahead	Yards
1	260	1	100
2	320	2	195
3	670	3	405
4	830	4	500
5	910	5	550
6	870	6	520
7	760	7	460
Abeam	620	Abeam	375
9	480	9	290
10	350	10	210
11	260	11	160
12	180	12	110
13	140	13	85
14	115	14	70
15	95	15	57
Aft	75	16	50
	70		40

NOTE.—Speed of Torpedo = $\frac{2}{3}$ speed of Ship attacked. The enemy is supposed to discharge her Torpedo at the edge of the Danger Area.

From Table III. it is apparent that when approaching on the bow a fair chance is obtained at 910 yards, whereas it is necessary to come within 140 yards before an equally good shot is obtained if coming up on the quarter. When 3 points before the beam you may fire at 870 yards and get the same chance of hitting that you would obtain if you fired from 115 yards, 5 points abaft the beam. Although this table gives the distance at the moment the torpedo starts its run, it does not give the actual distance run, as when coming down before the beam the run is shortened, and when coming up abaft the beam it is lengthened. This may be better seen by Table IV.

Comparison of the distance run by a torpedo fired from the edge of the Danger Area, with the range at the moment of firing. Bearings taken from ship attacked. Speed of torpedo, $\frac{5}{3}$ speed of ship. Ship attacked, a battle-ship 380×75 feet.

TABLE IV.

Angle of Torpedo Attack, measured from Ahead.	Distance Torpedo has to run. Target subtends 10° .	Bearing of Enemy from Ship attacked at the moment Torpedo is fired.	Distance of Enemy when she fires her Torpedo.
Degrees	Yards	Degrees	Yards
Ahead	144	Ahead	250
5	150	4	250
10	195	7	310
20	270	13	425
25	330	16	515
30	385	19	590
35	428	22	660
40	468	25	720
45	515	29	770
50	555	32	810
55	595	35	850
60	630	38	880
65	660	42	910
70	685	45	910
75	705	48	910
80	720	52	900
85	730	56	880
90	730	59	850
95	730	63	810
100	720	66	770
105	705	70	720
110	685	74	670
115	660	78	620
120	630	83	550
125	595	88	495
130	555	93	435
135	515	98	375
140	468	104	320
145	428	110	275
150	385	117	226
155	330	124	180
160	270	134	139
165	230	145	115
170	195	156	95
175	150	168	75
180	144	180	70

NOTE.—Distances measured from centre of Ship attacked to Torpedo-tube of attacking Ship, except when the Torpedo is fired at Bow or Stern, when the midship point of the Ship, one-third from the end attacked, is the point measured to.

Table IV. supplements and explains Table III. Take, for example, the case of the ship approaching on the bow; she bears 45° before the beam, and is 910 yards off at the time she fires. Column 2 shows that the torpedo runs 685 yards before striking, and Column 1 that it comes down on the enemy 70° from ahead or 20° before the beam. Similarly, a ship attacking on the quarter, if she fires when she bears 44° abaft the beam (134° from ahead in the table), does not get a 10° shot till she has approached within 139 yards, and her torpedo has to run 270 yards,

coming in at 160° from ahead or 20° on the quarter. Now, it is true that, though these two torpedoes each have a target subtending 10° , one has much further to run than the other. Against this, however, is the fact that the torpedo attacking within 20° of right aft is more easily avoided. A handy ship could turn quickly enough to reduce the target by more than one-half, bringing the torpedo astern, or nearly so, whilst the torpedo coming down 20° before the beam can only be evaded by reversing one screw and turning towards the enemy, who will almost certainly get in another shot at closer range, without coming herself into the arc of torpedo fire, by the simple expedient of turning in the opposite direction, thus planting herself on the opposite bow fairly in the middle of her opponent's Danger Area. Before leaving the subject of the Danger Area, it is well to point out that a bow torpedo trained well forward threatens an opponent making for the centre of this area in a way that no other torpedo can do. Thus, the bow torpedo is most useful for defence. Seeing, then, that a ship is so weak on the bows, and so strong on the quarters as regards torpedo attack and defence, the first question for the tactician must be, Can a ship be so manœuvred as to prevent the enemy from getting on your bow when close to, and is it possible to make sure of getting on his bow whilst he is on your quarter? Now, it was shown, when dealing with gun tactics, that the most unhandy ship can turn fast enough to bring the fastest and most handy opponent on any bearing she pleases; the ease with which this is done increasing as the distance increases. Therefore, if a ship desires to keep another 4 points on the quarter it cannot be prevented. But if two opponents both did this, a very few minutes would put them out of range altogether, not only of torpedoes but of guns also. So that for torpedo attack the first thing is obviously to get within range. This may, and probably will, entail turning the bows towards the enemy. But directly torpedo range is reached a rapid turn must be made away from the enemy, not only to bring your own weapons to bear, but to avoid his.

In Diagram IV. it will be seen that F always gets her advantage by turning away from S. This latter being desirous of ramming keeps more or less bows on to F, and gets torpedoed in consequence. If she wished to trust to her torpedoes she would first turn as if intending to ram, thus drawing F on; and when within about 1,000 yards suddenly turn away, reversing her inner screw if necessary, and firing her torpedoes as they bore. If F did the same, an exchange of torpedoes would take place, possibly at long range, the ship which turned quickest getting the advantage. In Diagram IV., if both ships have torpedoes, F(c) has decidedly the best of it with S_c, and gets two good chances at 300 yards; whilst S_c's torpedoes would have a hopeless stern chase. F(e) has some advantage over S_d, but as their nearest shots would be at 500 yards range they would probably miss, firing as they both would with helms hard over. Indeed, in this kind of attack, good practice with helm hard over from the outer torpedoes is essential. A bow torpedo is useful as getting the first shot, but it has to be fired at longer range than the beam and quarter torpedoes. Training torpedoes would have no advantage over fixed ones, save that the

same tubes which would be used well aft on the quarter to ward off an attack from astern, would, in this case, be fixed on their extreme forward bearing. It is obvious that a torpedo attack, such as I have sketched, requires great skill, such skill in fact as can only be gained by constant practice at the highest speeds, and that since rapid turns are essential to success it is altogether unsuited to ships in company in any fixed formation; indeed, the torpedo would appear to be essentially a cruiser's weapon, so far as offence is concerned. The great increment of strength which torpedoes give in a retreat is obvious. It was shown above that the retreating position has several advantages in a gunnery duel, and when both guns and torpedoes are taken into consideration the position is a very strong one, even when speed is deficient; and for a fast ship nothing seems more desirable than that the enemy should take up a position on her quarter.

It is a common thing to assert that ships will pass close to broadside to broadside, but this should give each ship such an excellent chance of torpedoing the other that it would be a most imprudent manœuvre. Diagram VI. shows the advantage to be gained by turning away from an opponent who steers to pass broadside to broadside. When 1,200 yards apart the ships are steering to pass each other at 300 yards range. If they did so, each would fire bow, beam, and quarter torpedoes at 300 to 420 yards range, and even if A's bow torpedo hits whilst X's misses, this will not save A, for X will have fired her beam torpedo before she is struck, so that if either ship makes a straight shot with one of her first two torpedoes, the other will be disabled. Indeed, the sinking of both ships seems only too probable.

1. If A stands on till within 600 yards of X, see A *c*, and then turns with helm hard over:—

		Range.	Angle of Target.
<i>xc</i>	X fires bow torpedo	-	420 yards 16°
<i>xc₁</i>	X fires broadside torpedo	-	410 " 11°
<i>ac</i>	A fires bow torpedo	-	410 " 11°
<i>ac₁</i>	A fires broadside torpedo	-	320 " 21°
<i>ac₂</i>	A fires quarter torpedo	-	360 " 17°

That is to say, each ship gets two good chances before the other can strike her back, and A gets a third chance in case X misses with her first torpedo. The destruction of both ships is therefore probable, whilst X is almost sure to be hit.

2. If A turns when within 900 yards of X as at A *b*, her chance of torpedoing X is somewhat less, but she is very likely to escape herself. The following torpedoes are fired:—

		Range.	Angle of Target.
<i>xb</i>	X fires bow torpedo	-	560 yards 12°
<i>xb₁</i>	X fires beam torpedo	-	650 " 2°
<i>ab</i>	A fires beam torpedo	-	350 " 16°
<i>ab₁</i>	A fires quarter torpedo	-	375 " 18°
<i>ab₂</i>	A fires right-aft torpedo	-	500 " 12°

X gets one fair shot and one hopeless one, whilst A has two good shots and one fair one. X should certainly be torpedoed.

3. If A turns when she reaches 1,200 yards range:—

		Range.	Angle of Target.
xc	X fires bow torpedo	750 yards	7°
aa	A fires beam torpedo	490 "	11°
aa ₁	A fires quarter torpedo	470 "	14°
aa ₂	A fires right-aft torpedo	560 "	12°

X gets one almost hopeless shot, whilst A gets three fair ones.

The advantage of having a bow torpedo is most obvious: but for X's bow torpedo A could with confidence stand on to 900 yards or less, but if X is known to have a torpedo bearing well forward the safest course is to turn at 1,200 yards. In this duel X is of course depicted as standing on when there is every reason for her to turn away. It is possible, however, that such a mistake might be made, and one object of the diagram is to accentuate the necessity of turning away in time. It also demonstrates the defensive value of a bow torpedo; this will come out strongly when dealing with the ram, for it is extremely difficult to ram a ship without exposing yourself to her bow torpedo.

It was said that X should have turned away, failing this, she might reverse her inner screw and turn towards A, as shown in the dotted line. By so doing she greatly reduces the angle of target, and A's torpedoes may pass ahead. Still, A_c will get a very easy shot with her quarter and stern torpedoes, the range being much shortened by X's turn. A_b has less chance, and A_a's chance is very much reduced. Hence it is evident that whether the turn be towards the enemy or away, the turn should be made in good time.

Since the usual defence when engaged in torpedo warfare is to turn away, it is obvious that two ships acting in concert should have a great advantage over a single enemy, always provided that they have the necessary speed, for if properly placed turning away from one means turning towards the other. Take the case of a heavy ship X, attacked by two light craft A and B. The method of attack is for A and B to separate, then get X between them and close in upon her from opposite directions at their highest speed. They will thus be only exposed for a short time to X's heavy fire.

Such an attack is depicted in Diagram VII. A and B cruising in company are light cruisers of 20 knots speed. They sight X, a battle-ship, speed 14 knots, at a distance of ten miles. As soon as X sights them she turns away, and the chase depicted takes place. A and B open out and come up on either quarter of X, and in somewhat less than two hours are on her beam at 6,000 yards range, or at any other distance which may be considered safe from gun fire. (See A₅, X₅, B₅.) It will be noted that A and B keep together at first and open out as they close on X, but taking care to keep outside 6,000 yards.

When the cruisers have reached their position for attack they alter course inwards, keeping X fairly between them. In twelve minutes they will have closed from 6,000 yards to within 300 yards of X, their rate of

closing being 14½ knots per hour, or nearly 480 yards a minute. If X does not stand straight on but turns (see X₁) it is true that she shakes off one opponent, but the other is a much shorter time under fire. If the alteration of course be 45° A₁ is within easy torpedo range in six-and-a-half minutes. It is true that B₁ is at this time 4,200 yards off and cannot assist her consort, but the other has a better chance of escaping her enemy's fire as the rate of approach is 28 knots in lieu of 14½. I do not consider the risk run by the light craft particularly great; they will be less than four minutes within 2,000 yards range, and, whatever guns may do at peace experiments, all experience of actual war goes to show that fire, which theoretically should be overwhelming, is not so practically. All the ships engaged at the Yalu river ought to have suffered terribly in, say, the first half hour, yet at the end of five hours all the most important ships were practically intact. A and B might equally miss with their torpedoes, the only remedy for which is to fire a large number. Double-barrel tubes appear to me to be worthy of more attention than they have received, and if A and B were armed with double-barrel submerged tubes their chance of success should be very good.

In the diagram X is depicted as standing straight on till A and B get abreast of her. This, of course, she need not do, but however she may twist or turn she cannot prevent A and B getting her between them on any compass bearing they please.

For example, suppose X₃ ports her helm as at X'₃, A directs B to take station W.N.W. 6 miles, and steers herself to bring X W.N.W. 3 miles. The result is depicted at A'₄, X'₄, B'₄. A similar state of things has been established to that depicted at A₅, X₅, B₅, and the light craft close on X as before. With three light cruisers the third would be stationed four-and-a-half miles from the centre of the line joining A and B and at right angles to it, so as to get X into the centre of the circle on the circumference of which the three cruisers had placed themselves. When thus placed the cruiser or cruisers before X's beam makes the attack; the time from 6,000 yards to 300 is seven-and-a-half minutes when placed as in the diagram, the rate of approach being 750 yards per minute. For any other disposition the rate of approach increases up to 1,130 yards per minute when a single attack is made from ahead. As before, X by turning towards one of her aggressors shakes off the other two for the time, but shortens the period during which the attacking craft is under fire, and also reduces the number of guns that will bear on her.

To sum up with regard to torpedoes:—

Owing to the great length and considerable draught of water of all sea-keeping vessels carrying torpedoes, it is almost certain that a ship attacking another with torpedoes will herself be assailed by similar weapons, and, therefore, every endeavour should be made to secure an advantage by superior tactics.

An encounter on equal terms is only to be sought when the enemy is a far more powerful and valuable ship.

To get an advantage with regard to range it is necessary to be before your opponent's beam whilst he is on or abaft your beam. To get an

advantage with regard to target it is necessary that your torpedo should attack the enemy more nearly abeam than the line of attack of his torpedo with reference to your course. Hence the ideal position is to be on the enemy's bow whilst he bears abaft your beam. In this position it is easy to fire two or three torpedoes, and then turning away to give the opponent's torpedoes a hopeless stern chase.

Opportunities with torpedoes are very fleeting, when an opportunity does occur a ship firing four or five torpedoes would evidently be more likely to hit than one firing two or three. Hence a number of torpedoes should always be ready, and double-barrel tubes seem advantageous.

Since a ship having the speed of another can choose her range, it rests entirely with the faster of two opponents whether to use torpedoes or not. But a slow ship can always force a fast opponent to come up on her quarter or to let her go. No superiority in speed will enable a fast ship to plant herself on her opponent's bow if the other resolutely turns her stern.

Two or three fast ships acting in concert can always get within torpedo range of a slower ship without undue exposure to gun fire, and one or other of them is almost sure to get in an attack on the bow on favourable terms.

Turning power, especially the power of turning quickly in a narrow compass which is conferred by twin screws, is useful in torpedo warfare, as is also the power of altering the speed rapidly. A vessel with powerful engines in proportion to her displacement is, therefore, superior to one of the same speed but with proportionately less powerful engines. Thus a short ship is superior to a long ship of the same speed.

The most important factors for success in torpedo warfare are :—

1. Speed.
2. All-round torpedo fire.
3. Capacity for discharging a number of torpedoes simultaneously.
4. Turning and stopping power.

POWERS AND LIMITATIONS OF THE RAM.

In treating of Torpedo Tactics it was pointed out that a torpedo is not laid at the ship which it is deemed to hit, but at the point which her centre will occupy when the torpedo reaches her. Exactly the same rule holds good for a ship desiring to ram another. She must steer for a point ahead of her opponent which she considers will be the position of her opponent's centre when the ships come in contact. Now, suppose a ship to be going 18 knots and steering North, she is then running 600 yards per minute. An opponent steering East also at 18 knots wishes to ram her. She has first to estimate how far she is from her enemy's track, say this is 300 yards. This governs the time that will elapse before the collision, for she knows her own speed, which, if it is 18 knots, will make the time 30 seconds. Next she has to estimate her enemy's speed. This governs the distance of the point for which she must steer from the enemy's centre. Lastly, she must estimate the enemy's course. An error of

3 knots in the speed or of 1 point in the course of the enemy, or a similar mistake in her own speed or course, will land her in disaster, for if she goes too far ahead she will be rammed, and if too far astern she will be torpedoed. And, naturally, even if all the guesses—and they amount to little more—are accurate, the whole problem will almost certainly be altered by the enemy altering her course or reducing her speed. Therefore, it is almost certain that a ship approaching to ram another will make serious mistakes, and evidently the best ship for ramming is one that can readily regain the position of advantage which she may have momentarily lost by a mistake. Accordingly, it was laid down, as far back as 1880, by the late Rear-Admiral Long, that "The power of a ram varies inversely as her length, and directly as the distance between her centres of gravity with opposite helm in a given small interval." This exactly states the case so far as avoiding an opponent's ram, which is aimed at your centre of gravity, is concerned. But it is obvious that for purposes of attack the movement of the ram, not of the centre of gravity, is of the first importance; and also, as will be shown, the capacity for rapidly altering the speed may exert a very great influence on the success or failure of a ramming attack. With regard to the "given small interval," it will be shown that a ship with average manœuvring powers can alter the position of both her ram and centre of gravity to such an extent in a run of about three lengths that it is of no practical utility to consider the tactics to be adopted when the opponents are further than this from the point of collision. We will, therefore, direct our attention first to the capacity that the average ship possesses, due to the use of helm or engines for varying her position at the end of a run of three lengths, and then to the tactics which should be adopted when two rams come within three lengths of the point of collision.

Diagram VIII. depicts the several possible positions of a ship X, of average handiness after running one, two, or three lengths respectively, the helm being put hard over, and one or both screws reversed. Eight positions are given for a three-length run, viz., straight on, $\frac{2}{3}$ helm, hard over, and hard over reverse one screw, these last three being duplicated, and finally full speed astern. It will be noted that the point of the ram in each position is about half a length from its neighbour. Therefore if success is obtained by steering as in X_3 , altering the position of the ram to the next position, viz., $\frac{1}{2}$ of what can be done, spells failure—see X_{a3} . Of course, if the distance from the point of the ram to the enemy's track is lengthened, and its course altered simultaneously, as in the case of Z_{a3} there is a greater change than the half-length movement of the ram. If X_{a3} after the point of the ram had been moved from Z_3 to Z_{a3} was to continue her course, when the ram reached n it would be clear of A_3 's stern by the distance $Z_{a3}n$, so that the change of half a length in the position of the ram makes in this case $\frac{1}{2}$ length difference in the point of crossing the track of the enemy. In the case of X_{r3} the ram does not reach m' till after A_3 's bows have reached that point, and notwithstanding the movement of half a length the resultant is less than half a length, and X_3 could still ram A_3 .

Only six positions are given for a two-length run, those for 15° of

helm being omitted. Putting the helm hard over at two lengths produces somewhat less effect than 15° of helm at three lengths. As before, the reversing of one screw retards the ship sensibly, but to a far less extent than at three lengths. At one length the only marked effect is produced by going astern with both engines.

The increase in handiness and capacity for successful ramming due to an increase of speed is most marked. A ship running 12 knots would only reach the two-length position when a ship of 18 knots speed, and the same turning power, had run three lengths. Now, the handiness in either position is expressed by the relative lengths of the curves joining the alternative positions for the ram. Hence the handiness of an 18-knot ship is as 5 to 2 compared with a 12-knot ship of the same length, and turning on the same circle. An increase of speed of 50 per cent. increases the handiness 150 per cent. Moreover, the fast ship can choose whether she will ram or not, and has other most material advantages. The small arrow points show the position of the ram with helm hard over at various speeds. It is evident that at all hazards speed must be maintained, it would be the worst policy to shorten a ship to make her circle smaller if speed were thereby sacrificed. Moreover, short ships, even when their final circle is small, do not get on their circle quickly, thus they are not handy for a run of two or three lengths; the "Ajax," and "Inflexible" are notable instances. Drift is fatal for a ram, her head is pointed in the right direction, but the ship goes sideways and loses all her headway.

TABLE V.

*Effect of Alterations of Helm and Speed when manœuvring to Ram.
Opponents steering at right angles to each other.*

Distance run by Ship.	Change in Direc- tion of Ship's Head.	Helm hard over.				Helm hard over. Reverse inner Screw, Turning towards Enemy.		Reverse both Screws.	
		Turning away.		Turning towards Enemy.		Movement of Ram.	Movement of Centre.	Movement of Ram.	Movement of Centre.
		Movement of Ram.	Movement of Centre.	Movement of Ram.	Movement of Centre.				
Lgths.	Pnts.	Lengths.	Lengths.	Lengths.	Lengths.	Lengths.	Lengths.	Lengths.	Lengths.
1	1	0·05 F	nil	0·08 A	nil	0·18 A	0·10 A	0·20 A	0·20 A
2	2 $\frac{1}{4}$	0·32 F	0·10 F	0·60 A	0·35 A	0·92 A	0·63 A	0·58 A	0·58 A
3	4	0·53 F	0·33 F	1·48 A	0·97 A	2·0 A	1·43 A	1·10 A	1·10 A

F signifies a movement forward with reference to the Enemy.

A signifies a movement aft.

Table V. gives much the same information in figures as may be obtained from an inspection of Diagram VIII. Attention is there directed to the fact that the centre of a ship is much less displaced by the action of the helm than is the ram, whilst the stern, of course, is less affected still. This is also apparent from Diagram VIII., where X_3 must use more than 15° of helm to clear A_2 . Table V. also shows clearly how much more effect is produced by turning towards than by turning away from

the enemy. The reason is, of course, that putting the helm over stops a ship and therefore puts her further astern, it also lengthens the distance to the enemy's track when she is steering at right angles to the ram. It is evident that if it is intended to turn away, the turn must be effected in good time, as even after a run of three lengths the alteration due to turning away is not great. At two lengths there is still time to do a great deal of turning towards the enemy, especially if the inner screw is reversed when the helm is put over, but it is too late to turn away. At one length from the collision point it is too late to do anything with the helm. Something may be done by going full speed astern when the enemy threatens to strike you very far forward.

With regard to the angles turned through if two ships mutually turn towards each other when three lengths from collision point, the alteration in the angle of impact will be 8 points; this will convert an attack from abeam into a stem to stem encounter. At two lengths each ship can turn $2\frac{1}{2}$ points, or $4\frac{1}{2}$ points in all. At one length the angle that can be turned is only half a point. The change in the direction of the ship's head is somewhat increased by reversing one screw, but it does not amount to half a point in 4 points.

We will now discuss the tactics for two rams which have approached within three lengths of the point of collision, and first we will take what is, in many respects, the simplest problem, viz., when the two opponents are steering at right angles to each other. In Diagram IX., A has established herself in the most favourable position for ramming X, for the speed of the ships being equal after a run of three lengths, she will strike X fairly amidships and at right angles at $A_3 X_3$. Moreover, she cannot turn away without getting across X's bow, so the attack must go on. Now, X has two alternatives open to her:—

- m.* She may turn away hoping to clear A's bows, and trusting to her torpedoes to sink A.
- n.* She may turn towards A hoping to ram or to hit with her bow torpedo.

Seeing that *m* is really a case of torpedo warfare, since the ram does not come into play, we will analyse it first. X puts her helm hard to starboard at 0 and the successive positions of the opponents are A_1 , Xd_1 , A_2 , Xd_2 , A_3 , Xd_3 , A_4 , Xd_4 . (See also Part (4) of Table). X just clears A's bows. As to the opportunities for firing torpedoes, X has capital opportunities with all the torpedoes on her starboard side and her stern tube. At 0 she can fire a bow torpedo at 340 yards, the target subtending 15° ; but this entails extreme forward training, viz., about 70° , which with 8° deflection makes the angle 62° . If she has a fixed bow tube, she must, of course, fire when it bears. As she closes her opponent the bearing comes aft. After running one length it is 52° , and distance 225 yards, target 21° . At two lengths the range is but 150 yards, bearing 22° before the beam, target 29° . A training bow tube would be laid about 45° before, and would have an excellent chance. A training broadside tube would also bear between 2 and 3 at little over 100 yards range, and a fixed broadside tube very soon after. Finally, quarter and stern torpedoes

would be fired at the closest range, almost too close perhaps, but if X has a good torpedo armament she could hardly miss with all her torpedes. A, on the other hand, gets no chance at all with torpedoes till her right-ahead tube bears as she sweeps under X's stern, but the torpedo would probably have been fired off long before, lest it should remain in the tube when ramming took place. If, however, this had not been done it would have a fair chance of hitting as the range is short and the target large. But if X had made a good shot with her bow torpedo before reaching Xd_3 , A would have been hit between 2 and 3 before the right-ahead tube bore, in which case the chance of hitting would be very small. But if X had no bow tube A would be able to fire long before X's broadside torpedoes reached, and both ships might very possibly be torpedoed. The advantage of bow and right-ahead tubes is very evident in such an encounter, and indeed in all ramming attacks a bow torpedo-tube is more useful than any other.

Let us now examine X's other alternative, viz., a turn towards A in the hope of ramming her. But first of all she has to find out that she is going wrong, and that if she stands on she will be rammed. This can only be done by carefully noting the changes in bearing of A. If the bearing of A's ram from the centre of X remains constant, then X will be rammed amidships. We see by Part I. of the Table attached to Diagram IX. that this is the case. In the ten or fifteen seconds between 0 and 1, the bearing of A's bow remains at 46° , whilst her stern comes aft slowly, viz., from 53° to 56° . X grasping the situation, aided probably by a similar observation before arriving at 0, ports his helm 20° at that point. The result will be that instead of A_3 ramming X_3 , Xa_3 will ram A_3 as depicted in the diagram. (See also Part (2) of Table for changes of bearing.) But if A be equally on the alert she may possibly detect X's move, though the bearings tell her little or nothing. (See Part (2) of the Table where from 0 to 1 A's bearings are much what they were before.) This is evident also from Diagram IX., where the view of Xa_1 is practically the same as that of X_1 . Still, there is the change of $\frac{1}{2}$ a point in Xa_1 's course, and if this is seen, A must at once clap her helm hard to starboard, and if this is done at A_1 she will ram Xa_3 , as depicted, at Aa_3 . But if X made a further change by putting helm hard over and reversing inner screw she would come round between 2 and 3 to X *pn*, and A might meet this by A *cn*, which does not entail the reversing of one screw. A, indeed, holds the interior position, she can reach A_3 by reversing one engine from the first, and here X cannot touch her, but there is nothing to induce her to reverse thus early, and an encounter such as that depicted at X *pn* A *cn* seems most likely. If ships meet thus at a combined speed of 30 knots or more, who can predict the result! Nothing seems certain save that there will be a fearful smash; and seeing that a very few degrees of helm gives the advantage, it certainly looks as if it must be a pure toss up who wins.

When we look at the second part of the table, which gives an account of the opportunities with torpedoes, we see that X has all the best of it. In every case a bow tube training 70° before the beam, if the deflection is moderate, will give her a capital chance of hitting A. In Part (1), where

she is rammed, a broadside tube trained well forward might also bear and enable her, if the bow torpedo missed, to still sink her antagonist as she was in the act of ramming. In Part (2), where she turns to meet A, she gets her bow torpedo off before ramming, and also sells her life dearly in Part (3) with the help of the bow tube. On the other hand, X bears too far ahead from A for her bow torpedo to have any chance, nor will the right-ahead tube bear.

To sum up, therefore: notwithstanding A's initial advantage for ramming, the probability is that she will get the worst of it, if not with the ram certainly with torpedoes. X can make a great success by means of torpedoes if she is certain of clearing A's bows, but if she tries to do this with insufficient room she will be rammed. If both ships turn towards each other a violent collision at a small angle is practically certain, whilst nothing seems more uncertain than the result of such a collision. Neither ship can afford to stop or materially reduce speed till almost touching her antagonist, otherwise the latter will at once turn away and torpedo her. As a change of 2° or 3° in bearing, may be of vital importance, some instrument of the director type is necessary, and also the most intelligent and careful observation of the enemy's course, and any changes in it. Whether such careful observations are possible amidst the smoke and confusion of an action seems an exceedingly open question, but it is impossible to trust the eye to detect what are practically minute changes. Practical experience has long demonstrated that a director is necessary for torpedoes, and, after all, a ram is, so far as tactics are concerned, to be regarded simply as a slow but somewhat dirigible torpedo, and, so far as is generally known, there is absolutely no practical experience of ramming tactics which has demonstrated that a director is not essential. The absence of a ramming director in not only our own but all existing ships seems not so much an argument as to its non-utility, but rather that a ramming duel with an alert and efficient enemy has never seriously been contemplated.

In Diagram X. and its accompanying table we have the case of a ramming attack from the quarter.

A, as before, has established herself in such a position that if the two ships stand on, A will ram X amidships as depicted at A_3 , X_3 (Part (1) of table). Under these circumstances X has the two alternatives before alluded to, viz., to turn away in good time, or to turn towards the enemy in the hope of ramming him. But in this latter case X has to be more prompt and decided than when A attacked from the beam. Unless he takes immediate steps at 0 to stop his way as much as possible and bring his head round, he will be too late. In the diagram he is represented as putting helm hard to port and reversing starboard engine. (See X_{p1} , X_{p2} , X_{pn} .) By so doing, after a run of about two-and-a-half lengths, he rams A at A_n . As before, we must assume that X discovers his danger by noting the change in bearing of his opponent, the table shows that the direction of the bow is nearly constant but veers slightly aft, whilst that of the stern veers aft quickly. When X makes his counter-stroke—see Part (2)—both the bow and stern bearing veer in the opposite direc-

tion ; this shows that he is safe from the ram, and the stern bearing being nearly constant shows that he will not pass astern.

But, as is shown in Part (3), A has yet another card to play. If before arriving at A_1 he detects the movement of X's helm and engines, made some ten to fifteen seconds before at X_0 , and at A_1 reverses port engine with helm hard to starboard, he will meet his opponent at A *qn X pn*. In the diagram A is depicted as getting the best of this encounter, but a very few yards will give the advantage to X, and, as in the stem to stem encounter in Diagram IX. victory seems to be almost a matter of chance, so narrow is the margin. But there is this great difference : the ships no longer meet stem to stem but at right angles, and one or other is bound to be almost cut in two. The importance of being able to check the ship's way very speedily is of the highest importance; in fact, each ship would be more than likely to reverse her engines at full speed, and if one ship was lighter than the other she would have the advantage as being more easily stopped.

When we look at the second part of the table which deals with torpedo opportunities, it is evident that in this respect too the attack from the quarter is likely to be decisive. As before, the ship which has established herself in the best position for ramming thereby forfeits her chance of using torpedoes. In this case, though, if A has a bow tube well forward which can fire a torpedo 70° before the beam, with only 4° deflection, she has a chance at 270 yards; otherwise, she gets no shot at all. X, on the other hand, has the most excellent opportunities. She might fire a bow torpedo at X' when five lengths from collision point, with a good chance of hitting. At 0 three lengths from collision point the range is but 210 yards and angle subtended by the enemy 28° , so that she could scarcely miss. The direction of the enemy, however, is awkward, for torpedoes have to leave the ship in a direction 32° before the beam, a long way forward for a broadside tube, and too far aft for most bow tubes. This is one of the instances where the bow tube should be trained well aft. By waiting a little, however, the broadside tube will bear at 150 yards or less, so that if bow torpedo misses, the broadside tube should certainly hit. Double-barrel tubes allowing four torpedoes to be fired should render A's destruction certain.

If X turns to meet her enemy at 0 she still gets off her bow tube as before, but the broadside tube will be scarcely likely to bear unless it trains exceptionally far forward, and there is very little deflection. In Part (3), where she is rammed, she has a last chance of retaliating with bow tube if there was a torpedo ready, but this assumes a double-barrel tube, or far more rapid loading than any ships have at present; for she would, of course, have fired some time before in the hopes of disabling her opponent before she approached collision point. Finally, when X turns away, she has, as before, excellent chances with bow, beam, and quarter torpedoes, whilst A has the remote chance with bow torpedo already alluded to ; and, as in Diagram IX., her right-ahead tube will, of course, confront X's stern tube if she follows in X's wake.

With regard to the tactics to be used, it is evident then that for

ramming you must turn towards your opponent and be ready to check your speed; whilst, if either ship turn away from the other, the matter will be settled by torpedoes, the angle of impact being too small to make ramming of much account. Speed is, of course, of the highest value for turning away, or for a ship that has got too far astern and fears that her antagonist will get across her bows. But powerful engines with reference to the ship's displacement are of the greatest importance, and, as before, a double-barrel torpedo-tube bearing on the bow is almost essential both for attack and defence, but especially for the latter.

The Attack from the Bow is depicted in Diagram XI. As in the other diagrams, A has established herself in the most advantageous position possible, and if the two ships stand on, A_3 will ram X_3 amidships. (See Part (1) of the table.) But X has only to give 12° of port helm at 0. (See Part (2) of table). And she will thus gain the advantage, and Xa_3 will ram A_3 as depicted. But it is unlikely that A will stand steadily on, she will almost certainly starboard, and if X meets her by increasing her helm we get Xb_3 Ab_3 a stem to stem encounter.

If X in lieu of facing A elects to turn away, the result is disastrous, for Xc_4 is rammed by Aa_4 . With regard to the torpedoes they will not bear at all, except when Xc turns away. In that case she will get a capital chance both with her bow and broadside tube at short ranges, and with a large target which it would be difficult to miss. Thus, although X exposes herself to being rammed by turning away, her opponent equally exposes herself to being torpedoed when she follows and rams her in the quarter.

Finally, we come to the *Attack from Ahead*. In Diagram XII., A and X are mutually ahead of each other, and if they stand on, a stem to stem encounter takes place. But if either turns away and the other turns after her, as depicted in the diagram, we may get any one of the different phases of ramming attack previously analysed. Thus at A_3 X_3 it is a case of attack from the bow. The two ships may continue their circles or turn to meet each other. Similarly at about four-and-a-half it is a case of attack on the beam, and at five-and-a-half an attack from the quarter. Now, if we return for a moment to our previous analyses of these three forms of attack, we shall see that in the attack from the bow a comparatively small amount of helm puts a threatened ship in the position of aggressor, but more room than the three lengths from the collision point there allowed is required for turning away safely. In the beam attack the helm for meeting the enemy is increased, and it is safe to turn away at three lengths. In the quarter attack more helm still is required to pass from a position of danger to that of safety, and there is room to turn away at about two-and-a-half lengths from collision point. Of course, in the right-ahead attack no helm at all is required to meet the enemy, but it is not safe to turn away with the turning powers, depicted in the diagram, at less than five-and-a-quarter lengths from collision point or ten-and-a-half from the enemy. Thus, if a ship gets stem on to a ram within a distance of some ten lengths, or, say 1,000 yards, she is committed to a

ramming encounter ; assuming, of course, that neither her speed nor turning power is exceptional ; it is then too late to turn away.

Much has been written by exponents of ramming tactics as to the great advantage to be obtained by passing into your opponent's circle, but I have purposely avoided dealing with tactics directed to obtaining an advantage in this way, because I believe that much of the reasoning which attributes success in ramming to having first passed into your opponent's circle is founded on a fallacy. In Diagram III. it is perfectly apparent that F is safe from S's ram as long as she is in the latter's circle ; this has been seized upon by many writers who base upon it the fallacy that F can therefore ram S without risk. But it must be remembered that in order to ram S, F must poke her nose outside the magic circle of safety—see dotted tracks *a* and *b*. Now, if F crosses out of the circle at the right place, see 9 *b*, she rams S. But if she makes a mistake, as at 9 *a*, and comes out of the circle in the wrong place, she gets as thoroughly rammed as if she never entered the circle at all. As a matter of fact, the attack depicted to the left of Diagram II. is at the time 6, a ramming attack from the beam. S is somewhat too far ahead for ramming, so that she would do better to turn away and trust to her torpedoes ; but though F has an initial advantage she may, as in all other attacks, lose it by steering a faulty course or going at a wrong speed.

To sum up. Our investigations have shown that if threatened by a ram it is necessary to present yourself end on to the threatened attack. Either, that is, every endeavour must be made to point your own ram at the enemy, and thus threaten him in turn ; or a rapid turn away must be made, bringing your stern round towards the direction of the attack. In the first case, it is of the utmost importance that a ship should answer her helm quickly, and that she should be able to reduce her way at a moment's notice ; whereas in the latter case good speed and good torpedo armament, especially in the matter of bow and broadside tubes, are of the greatest value.

As a rule, the attacking ship which gets her ram into the proper direction for striking the enemy is precluded by that fact from using torpedoes. On the other hand, a ship having her ram somewhat turned from the enemy always gets a chance with bow torpedo, and she usually has time to fire her torpedo and yet turn in time to meet her opponent with her ram. A ship making a bad mistake, and thus exposing herself to the ram, by that very fact gets a good chance with bow and broadside torpedoes. Indeed, it is almost impossible to ram a ship which has bow torpedoes without exposing yourself to be torpedoed at short range. The only method is to come down at a very small angle on the bow and attempt to strike her very far forward. This, however, will almost inevitably result in a stem to stem encounter. Indeed, a ramming duel must be a stem to stem encounter if each ship defends herself by turning her stem and there is room to turn. Where there is no room as in the attack depicted from the quarter, the ships will collide at right angles with the most decisive results.

But when all has been said and done, the hard fact remains that, with

the highest skill and best possible ship, ramming must **always** be a most hazardous undertaking. It is impossible to examine the diagrams showing how to ram successfully without noticing the extremely narrow margin that there is between success and disaster. A change in the enemy's bearing of a mere quarter of a point or his helm going over, unless at once detected and allowed for by the necessary corresponding alteration in helm and speed, may turn what seemed to be a successful attack into a crushing disaster. Although practice, skill, and nerve must tell, the element of chance cannot be eliminated. Thus, although it appears an open question whether our present attitude of practically ignoring the ram is to be commended, so that when training officers for their duties ramming tactics are never taught or practised, still it must be conceded that of the three weapons, gun, torpedo, and ram, the latter must take the lowest place.

(To be continued.)



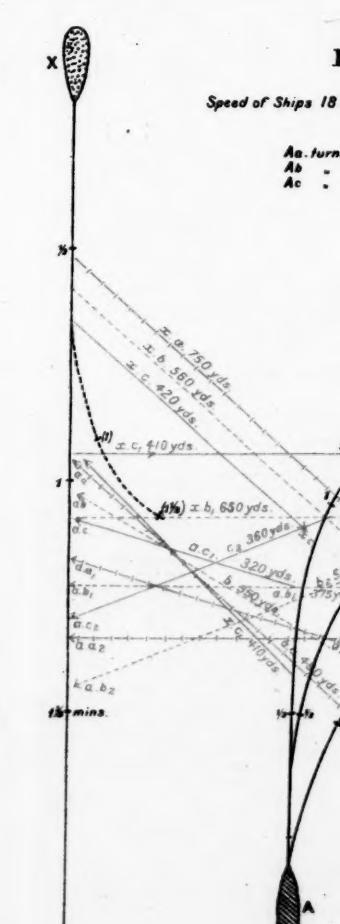
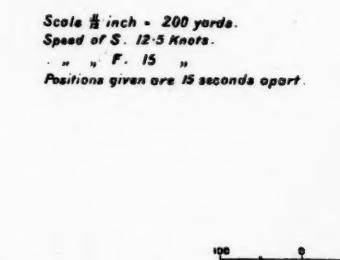
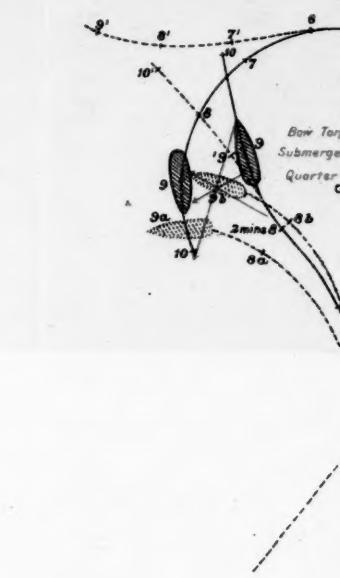
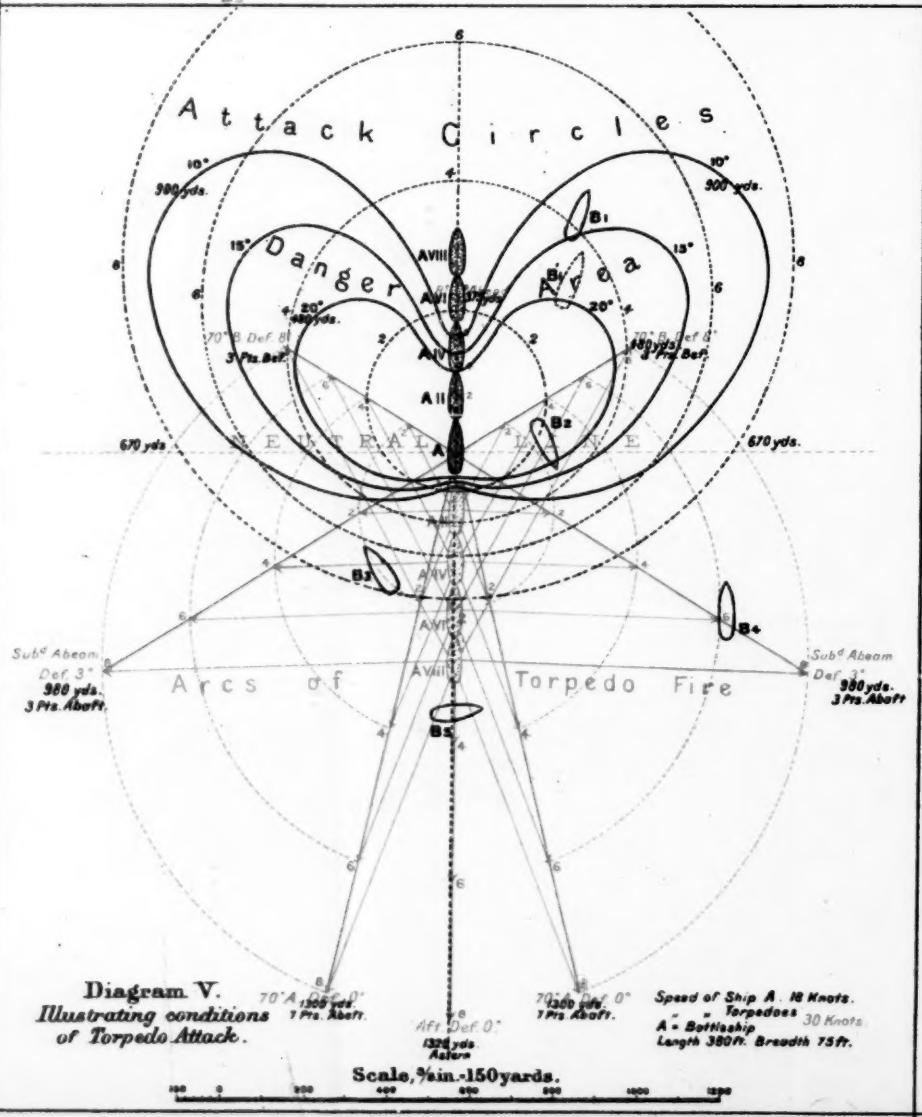
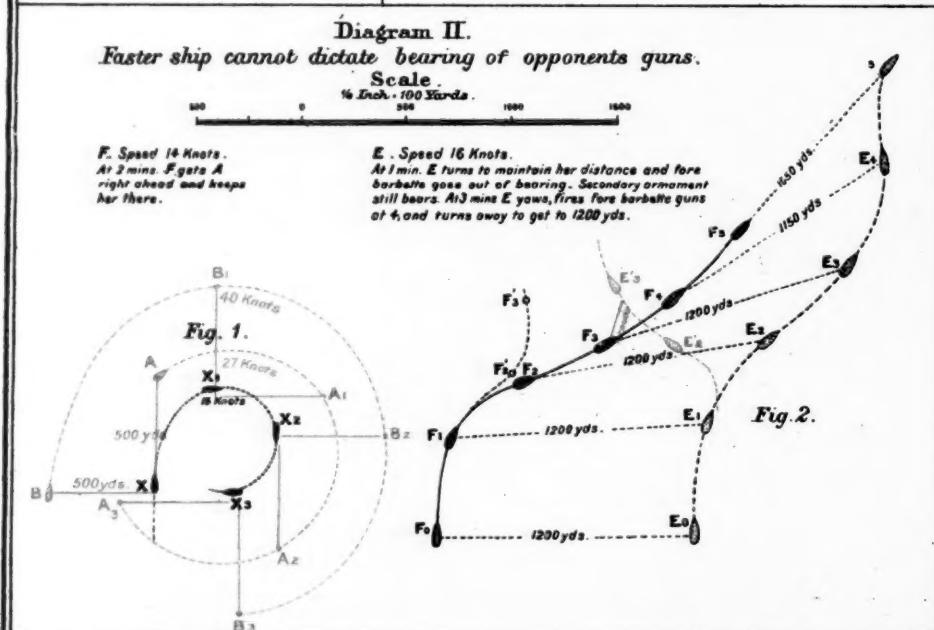
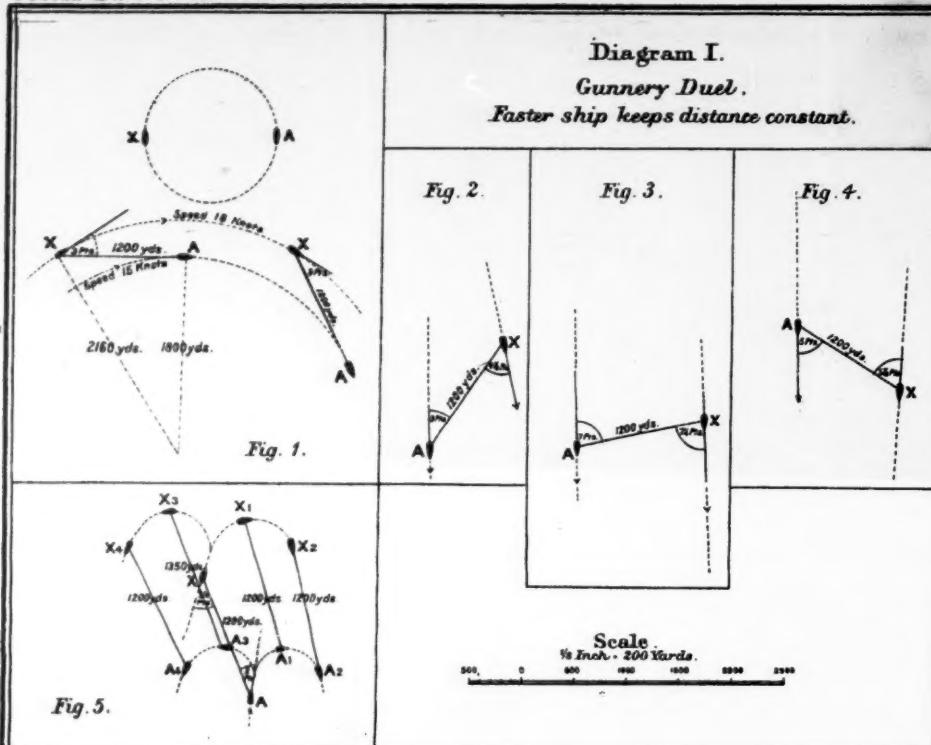


Plate I.

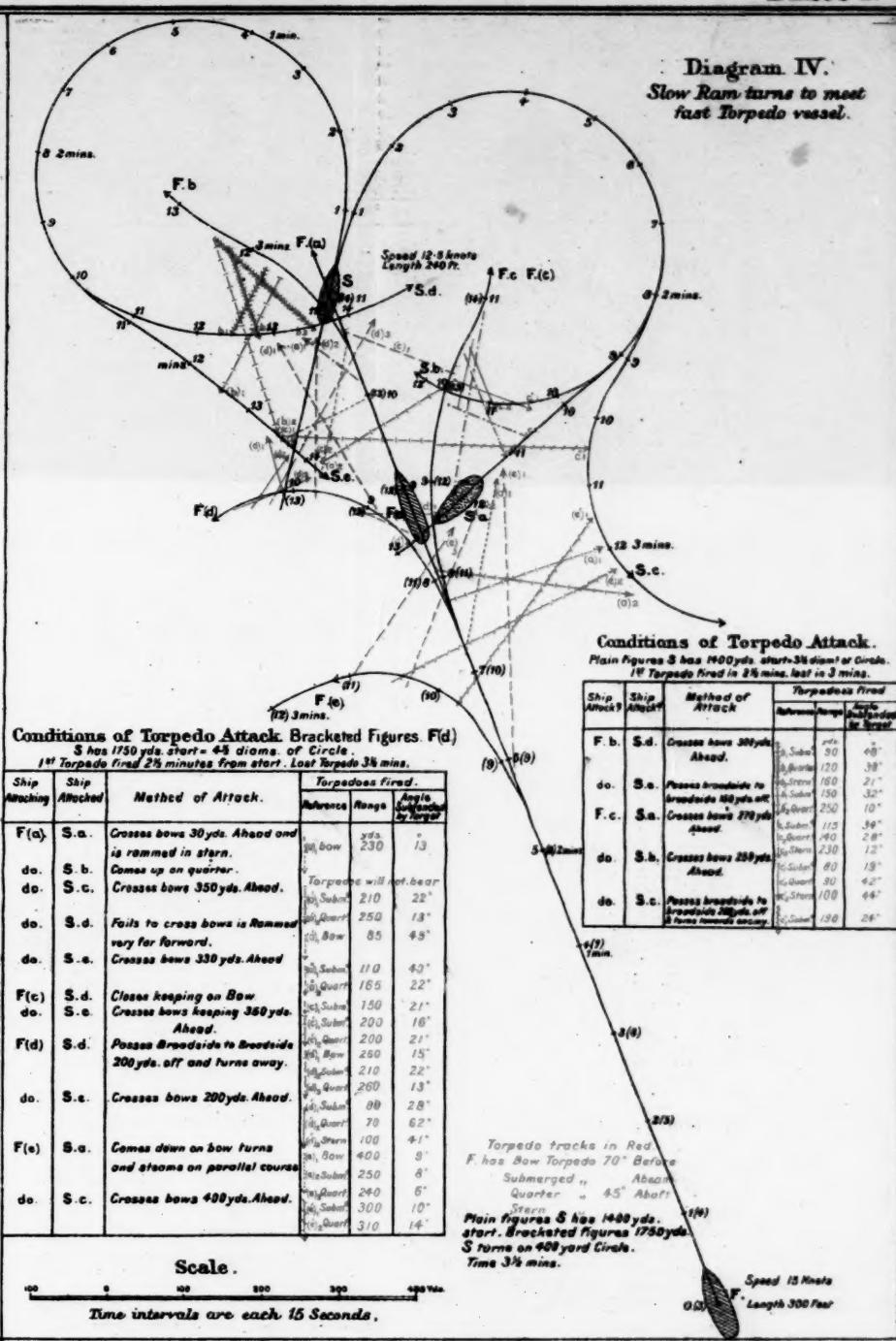
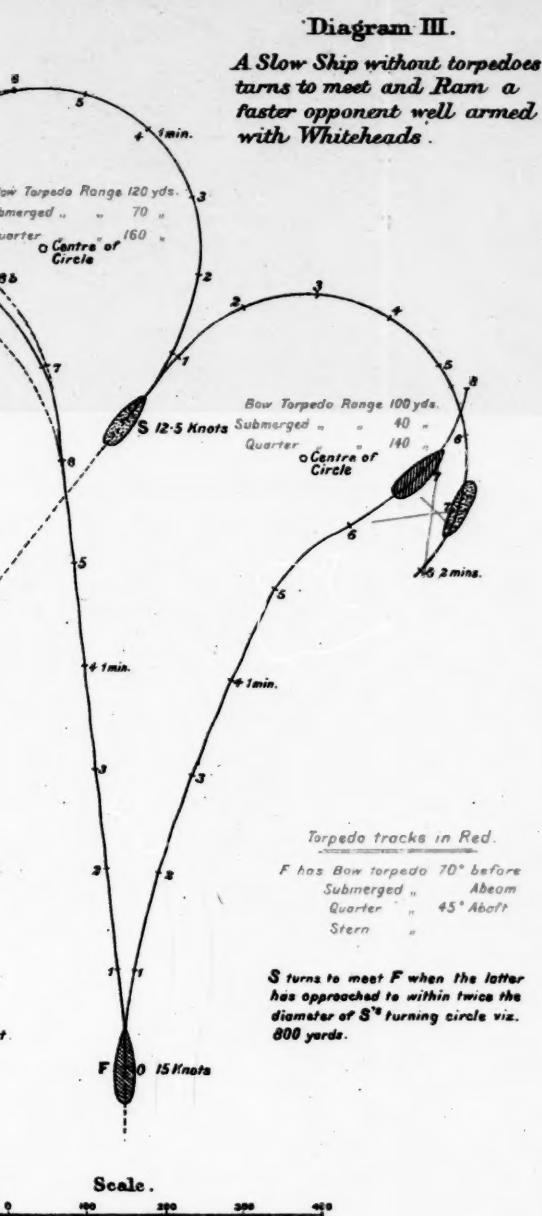


Diagram VI.

Speed 18 Knots. Speed of Torpedoes 30 Knots.

Torpedo Dual.
a. turns away when 1200 yds. from X.
b. " " 300 " " "
c. " " 600 " " "

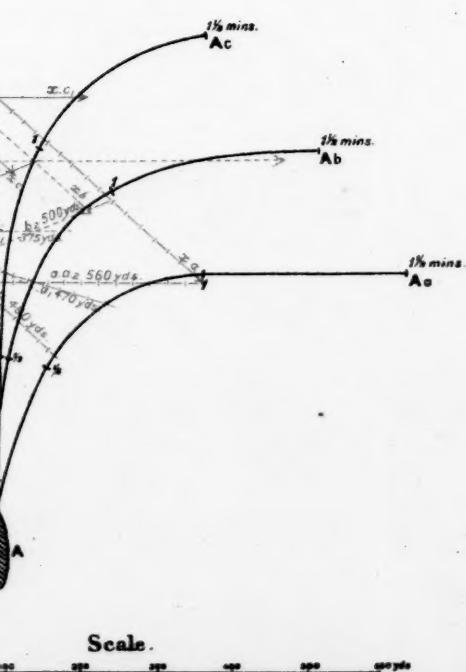
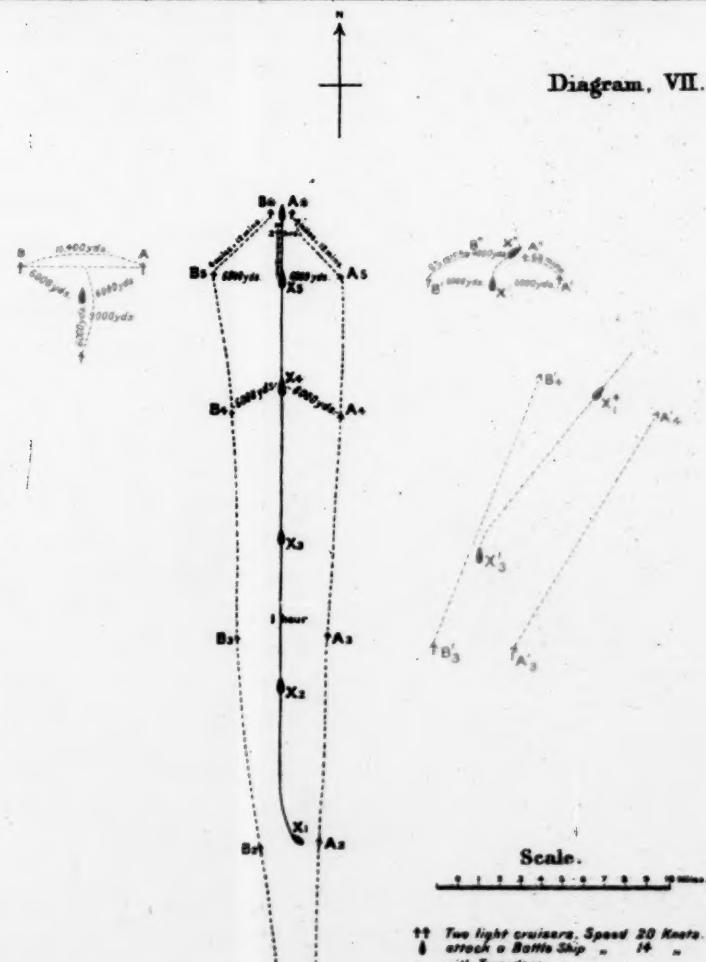
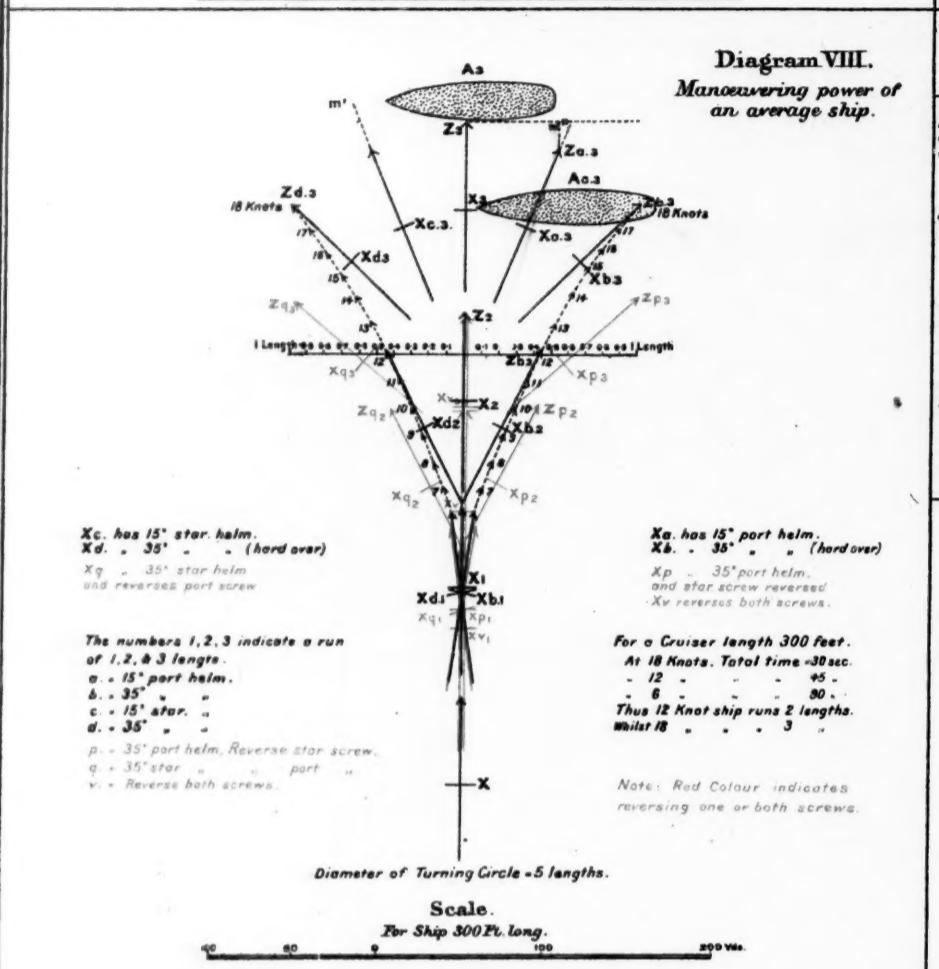
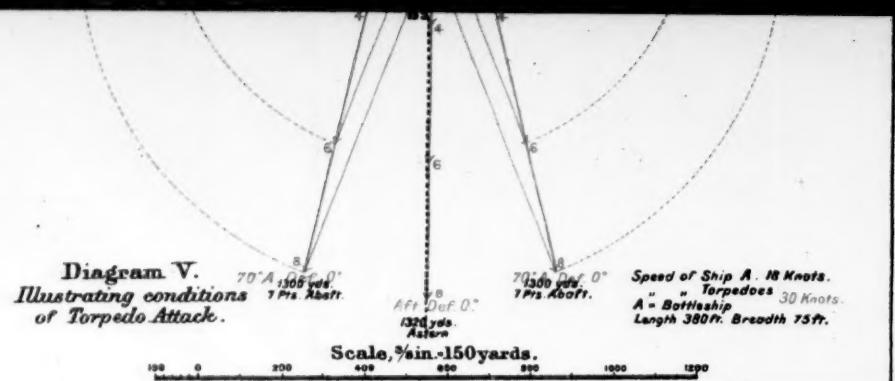
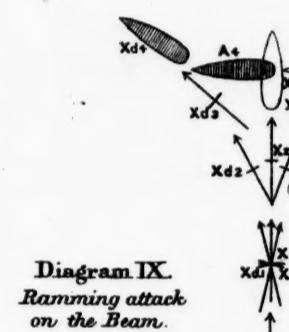


Diagram VII.

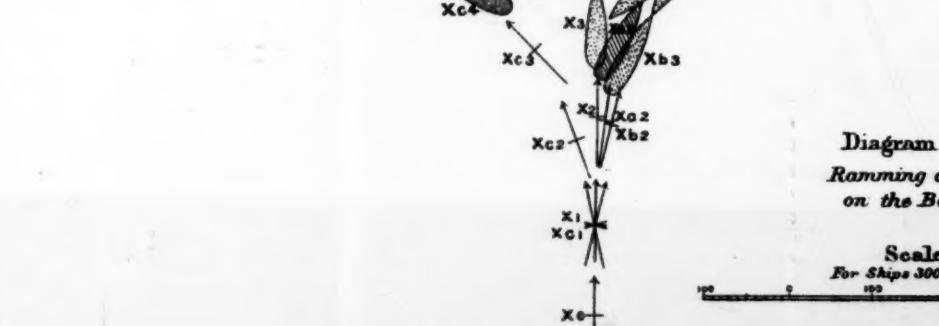
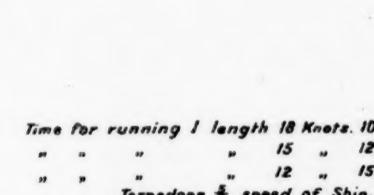


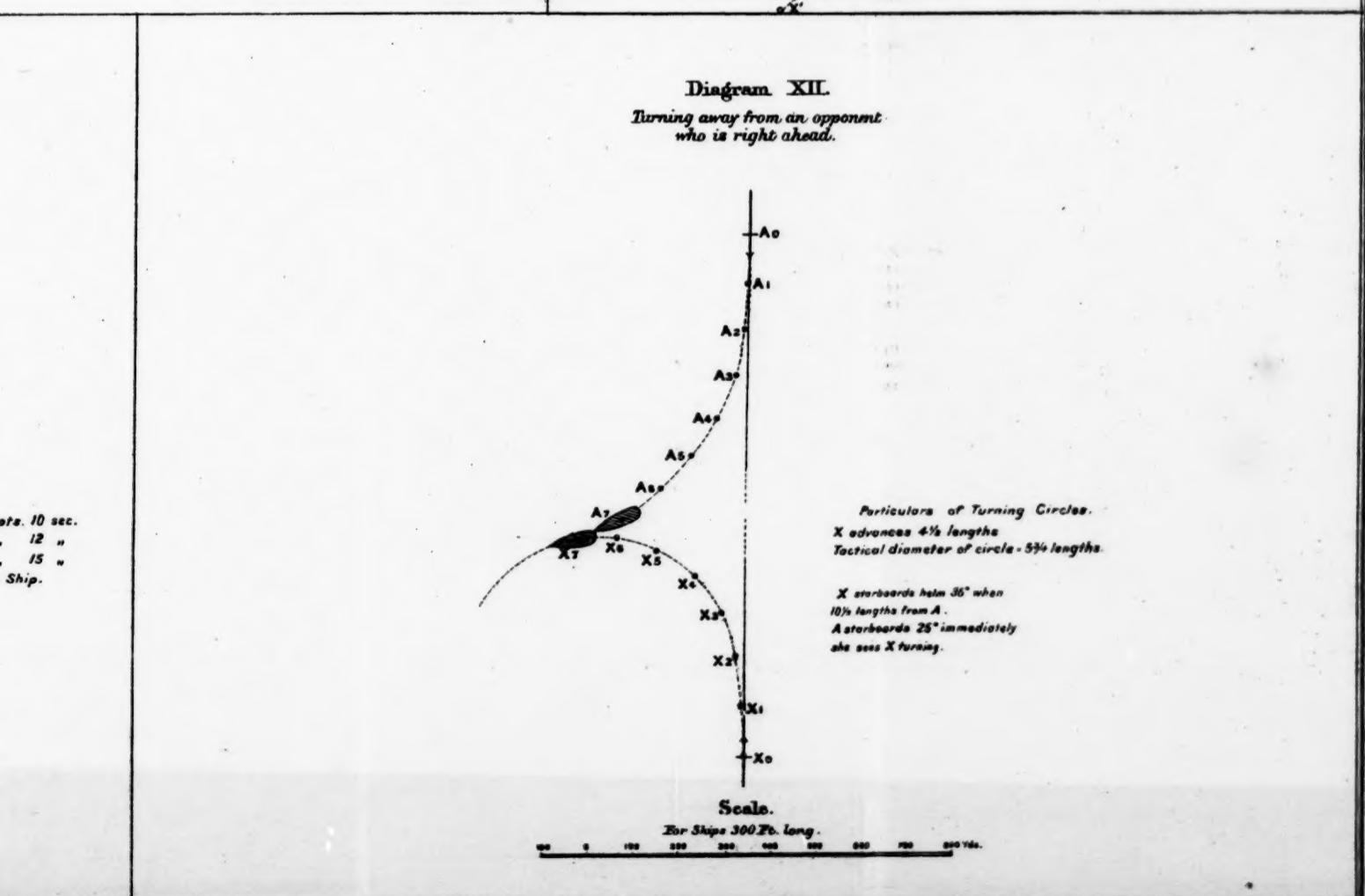
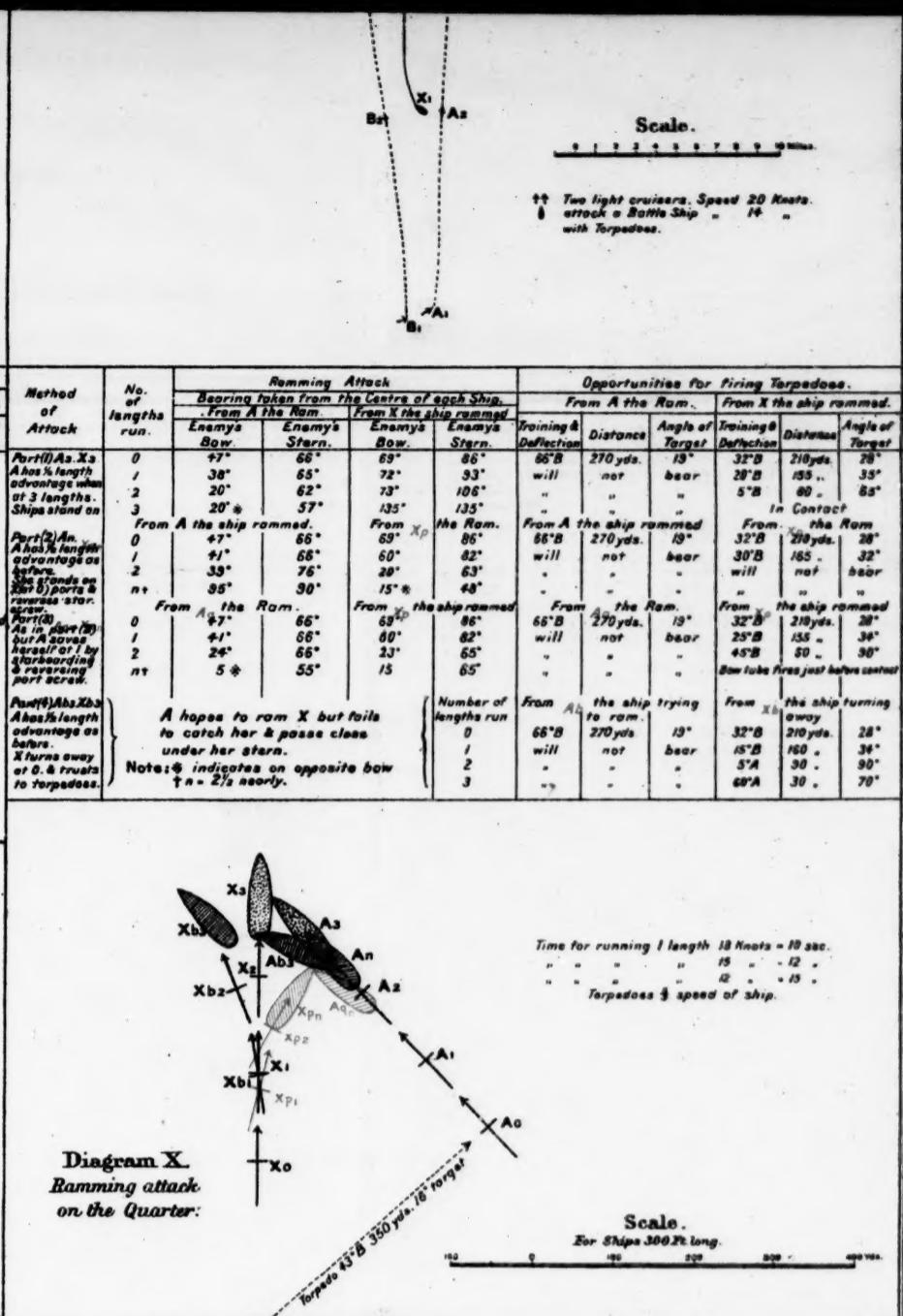
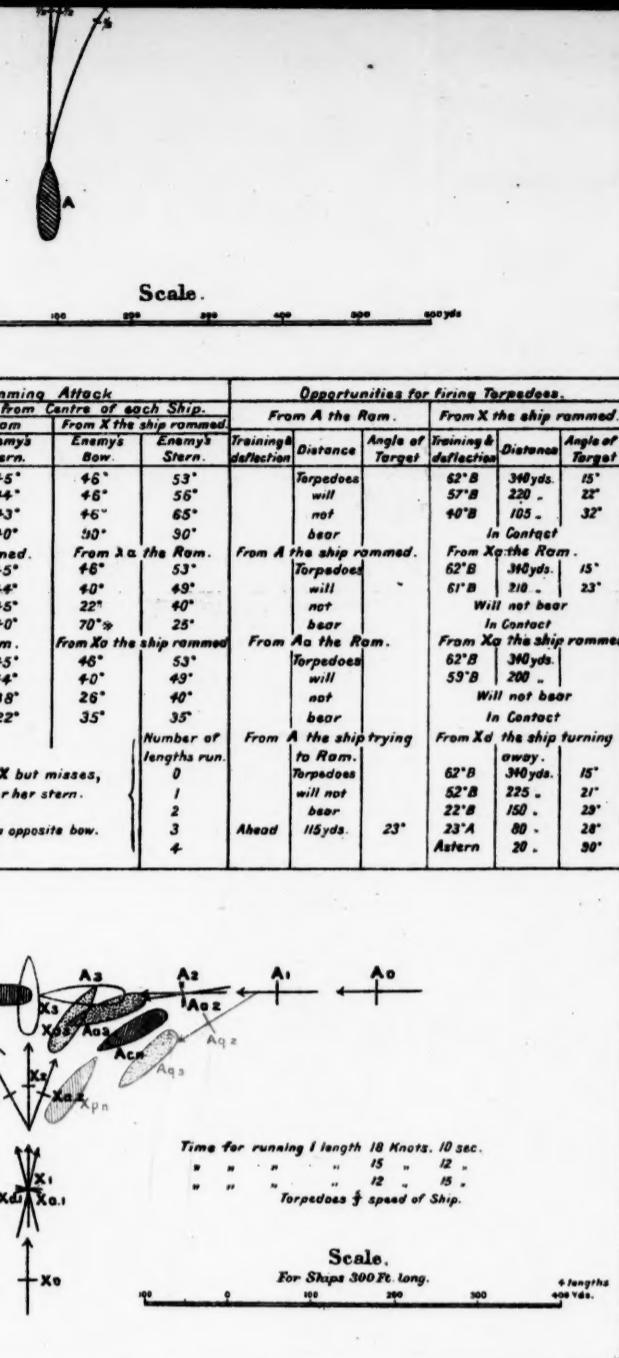


Method of Attack	No. of lengths run	Ramming	
		Bearings taken from From A the Ram Enemy's Bow	Enemy's Stern
Part(1) Aa, Xa. A has $\frac{1}{2}$ length advantage when at 3 lengths Ships stand on.	0	36°	45°
	1	32°	44°
	2	20°	43°
	3	40°*	40°
From A the ship rammed.			
Part(2) Aa, Xa. A has $\frac{1}{2}$ length advantage when at 3 lengths She stands on X ports 20°	0	36°	45°
	1	33°	44°
	2	27°	45°
	3	55°	40°
From Aa the Ram.			
Part(3) Aa, Xa. As in (2) but X starboards 35° after running 1 length.	0	36°	45°
	1	33°	44°
	2	20°	38°
	3	80°*	22°
A hopes to ram X but passing close under her			
Note: * indicates on oppos.			



Method of Attack	Number of lengths run	Ramming Attack.				Opportunities for firing Torpedoes Part (3)			
		Bearings taken for Centre of Ship.		From X the ship rammed.		No. of lengths run	From X the ship rammed.	Distance	Angle of Target
Part(1) Aa, Xa. A has $\frac{1}{2}$ length advantage when at 3 lengths Ships stand on.	0	18°	22°	23°	26°	0	will	not	bear
	1	17°	22°	23°	27°*	1	"	"	A the Ram gets no chance
	2	11°	22°	23°	30°	2	59°B	100 yds.	25°
	3	48°*	22°	45	40°	3	21°B	30	47°
From A the ship rammed.						4			with Torpedoes
Part(2) Aa, Xa. A has $\frac{1}{2}$ length advantage as before She stands on. X at 0 ports 12°	0	18°	22°	23°	26°				
	1	17°	22°	20°	23°				
	2	18°	22°	9°	17°				
	3	20°	20°	45°*	9°				
From Aa the Ram.									
Part(3) Aa, Xa. A has $\frac{1}{2}$ length advantage as before X starboards (hard over) A ports 20°	0	18°	22°	23°	26°				
	1	19°	26°	28°	36°				
	2	20°	37°	50°	58°				
	3	7°	43°	74°	92°				
	4	20°*	22°	135°	135°				







NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Rear-Admiral—Rodney M. Lloyd, C.B., to be Superintendent of Malta Dockyard, vice R. Duckworth-King. Captains—F. Finnis to "Amphion"; F. R. Boardman to "Howe"; H. L. Fleet to "Magdala"; J. G. Jones to "Mildura"; H. N. Dudding to "Iphigenia." Commanders—A. H. Smith-Dorrien to "Alacrity"; A. F. Welldon to "Tyne."

The new second-class cruiser "Iphigenia" is commissioned to relieve a sister-ship, the "Æolus," on the China station; and the second-class cruiser "Amphion" relieves the third-class cruiser "Satellite" in the Pacific. The "Endymion" has arrived at Portsmouth with the paid-off crews of the "Imogene" and "Polyphemus," and she is to take out a new crew for the first-class battle-ship "Centurion," the flag-ship in China, which ship is to pay off and recommission at Hong-Kong. The second-class cruiser "Flora," which has arrived at Plymouth with time-expired men from the East Indies, is to leave again with a new crew for the first-class gun-boat "Karakatta," which is to recommission at Sydney, and also with a crew for the third-class cruiser "Tauranga," at present in the Reserve at Sydney, which is to be commissioned to relieve her sister-ship the "Ringarooma," which ship will pay off into the Reserve at the same port. The first-class battle-ship "Howe" has paid off at Chatham and been recommissioned as the flag-ship at Queenstown, in place of the "Warspite," whose officers and crew have been turned over to her. This adds a first-class battle-ship to the Home Squadron, and releases a first-class armoured cruiser for other duties. The "Indefatigable" has left for the West Indies, and made before starting a most excellent commissioning full-speed natural-draught trial, averaging 18 knots, with the engines developing 6,500-I.H.P., out of a possible 7,000 under natural and 9,000 under forced draught.

The new second-class cruiser "Doris" has completed her trials. In her eight hours' natural-draught trial she developed a mean of 8,391-I.H.P. and a speed of 19·1 knots. The mean results of the trial were:—Steam pressure in boilers, 152 lbs.; in engines, 150 lbs.; vacuum, starboard 27 inches, port 26 inches; revolutions, starboard 140·1, port 139·7; I.H.P., starboard 4,288, port 4,123—total, 8,391. The mean results of the four hours' forced-draught trial were:—Steam in boilers, 154 lbs.; in engines, 149 lbs.; vacuum, starboard 27 inches, port 26 inches; revolutions, starboard 149, port 148; I.H.P., starboard 4,977, port 4,874—total, 9,851; air pressure, 1·2 inches; speed, 19·7 knots. The results of the coal consumption trials were equally satisfactory. The vessel made a trip from the Nore lightship to the Eddystone and back, steaming thirty hours continuously, and her record was as follows:—Draught of water, 19 feet 6 inches forward, 21 feet 6 inches aft; speed of ship, 17·7 knots; steam pressure in boilers, 147 lbs. per square inch; vacuum in condensers, 27·5 starboard, 25·6 port; revolutions, 117·3 per minute starboard, 117·1 per minute port; mean I.H.P., 2,473 starboard, 2,452 port—total, 4,925; consumption of coal, 1·6 lbs. per I.H.P. per hour. The machinery worked most satisfactorily and smoothly throughout. The "Doris" steamed at half-power the whole trip, so that the speed attained was extremely good; in fact, it eclipses the record of any other vessel of the same class.

The four destroyers, "Quail," "Sparrowhawk," "Thrasher," and "Virago," built by Messrs. Laird Bros., Birkenhead, have now completed their steam trials, which for several weeks past have been taking place on the Clyde. So far as speed alone is concerned, there is little difference to choose among the four vessels, as in each case the guaranteed speed of 30 knots was maintained for a three hours' run, with an I.H.P. slightly exceeding the 6,000 for which the engines were designed. It has been decided that a speed of about 13 knots an hour is the most economical rate at which the engines of the 30-knot destroyers can be worked. All four of these destroyers have been subjected to an eight hours' run at a 13-knot speed, and the results show the "Quail" to be far more economical in her consumption of coal than her sister-vessels. She maintained a speed of 13·1 knots, with the engines working at 141 revolutions and developing 4024-I.H.P., and a coal consumption record working out at 1·6 lbs. of coal per hour for each I.H.P., or at the rate of 44 $\frac{1}{4}$ knots for each ton of coal. The vessels are designed to carry 80 tons of coal, an amount sufficient to take the "Quail" a distance of about 3,600 knots at the rate of 13 knots an hour. Messrs. Laird are building six more of these vessels for the Admiralty.

The two new second-class cruisers, "Furious" and "Gladiator," were launched at Devonport and Portsmouth on the 3rd and 8th ult. respectively. They are sister-ships to the "Arrogant," also launched at Devonport last May, and the "Vindictive," building at Chatham. As a class these cruisers are 30 feet shorter than vessels of the "Talbot" type, while they are of 4 feet wider beam and about 150 tons greater displacement at load draught. Their dimensions are as follows:—Length, 320 feet; beam, 57 feet 6 inches; mean draught, 21 feet; and displacement between 5,750 and 5,800 tons. When completed for sea they are expected to develop, with a natural draught, 10,000-I.H.P., and to attain a speed of 19 knots. They are fitted with twin screws, and have engines on the triple-expansion vertical-inverted cylinder type. The high-pressure cylinder has a diameter of 26 inches, the intermediate of 42 inches, and the low-pressure of 68 inches, with a stroke of 39 inches. There are eighteen boilers of the Belleville water-tube type, placed in groups of six in three independent boiler-rooms, which are separated from one another by water-tight bulkheads running athwartships. Though grouped in this way, any of the boilers may be used independently of the others. The normal coal-carrying capacity of these vessels is 500 tons, but by utilising the wing spaces as bunkers, 1,000 tons may be put into them with, of course, corresponding alteration of displacement and speed. The armament will include four 6-inch, six 4·7-inch, eight 12-pounders (12 cwt.), one 12-pounder (8 cwt.), and three 3-pounders, all Q.F. guns, in addition to five Maxim guns and two submerged tubes for the discharge of 18-inch torpedoes. The peculiarity about these ships is that they have been built as rams, their bows being specially strengthened for that purpose. The stem is massive and well braced to the interior structure, the framing is heavy, the shell plating is 1 inch thick, and over this there is nickel steel armour-plating 2·5 inches thick, extending for a considerable distance aft, although with decreasing depth. At the stem the armour is the full depth of the ship, but the top edge curves downwards and the bottom edge upwards, so that the belt continues at the water-line for a distance of over 50 feet from the ram.

Two third-class cruisers, the "Proserpine" at Sheerness on the 7th ult., and the "Pactolus" at Elswick on the 21st ult., have been successfully launched. Their dimensions are as follows:—Length, 300 feet; beam, 36 feet 6 inches; maximum load draught, 15 feet; displacement, 2,135 tons. Their armament will consist of eight 4-inch (26 cwt.) Q.F. guns, eight 3-pounder Q.F. guns, two 45-inch Maxim guns, and two 14-inch torpedo-tubes. They will be fitted with triple-expansion engines and water-tube boilers. The machinery is designed to indicate

7,000-H.P. and to give them a speed of 20 knots, and they will have a radius of action of 7,000 knots at moderate speed. When commissioned they will have a complement of 225 officers and men.

In pursuance of the decision of the Lords Commissioners of the Admiralty gradually to raise the age for the entry of naval cadets and to shorten to some extent the period of training on board Her Majesty's ship "Britannia," the following arrangements will come into force from the 1st of January :—Cadets will be entered three times a year instead of twice as hitherto. The appointments will be dated from January 15th, May 15th, and September 15th in each year. The limits of age on each of these dates in the year 1897 will be :—On January 15th and May 15th, 13½ to 15 years; on September 15th, 13½ to 15½ years. For the entry on January 15th, 1898, the limits will be 14 to 15½. The limits of ages are raised gradually in order to avoid the undesirable result of cadets newly entered being older than the boys already on the "Britannia" entered in previous terms. There are to be three terms of about thirteen weeks in each year, to commence and terminate approximately as follows :—January 14th to April 14th, May 5th to August 5th, September 16th to December 16th. The period of training on the "Britannia" will extend over four terms, and the examinations will be held about six weeks before the commencement of each term. The examination for the entries to be made next May and September will be conducted on the same lines as heretofore. A notification will shortly be made public as to subsequent examinations. The period of service as naval cadet afloat is to be eight months, and eight months is to be the maximum time that can be gained on passing out of the "Britannia." Arrangements will be made to regulate the seniority of officers now on the "Britannia" who may be placed at any disadvantage owing to the introduction of these changes.

Orders have now been placed for the construction of the three second-class cruisers of the "Talbot" type which complete the new shipbuilding programme of 1896-97. Two of these vessels will be built by the Fairfield Company, of Glasgow, and the remaining one by the London and Glasgow Shipbuilding and Engineering Company. In accordance with the system recently adhered to by the Admiralty, the new ships will receive names connected with the old navy, and will be called the "Highflyer," "Hyacinth," and "Hermes." The name "Highflyer" dates back to the last century, and ships bearing the name were in several engagements in the war with the United States (1812-14), also during the Russian war (1854-55) at Sevastopol and other actions, and in China (1857-60). The boats of the "Hyacinth" were present at Fatshan Creek, the bombardment and capture of Canton, and the attack on the Peiho Forts. A "Hyacinth" was in several small actions in the great war, and another did good service during the first China war (1839-42). A "Hermes" took part in the war with the United States (1812-14), and the name occurs in connection with the Kaffir war (1850-53) and the second Burmese war (1852-53).—*The Times and Naval and Military Record*.

The following interesting account of the new torpedo-boat "Turbinia," which has been built at Wallsend by the Marine Steam Turbine Company, Limited, for the purpose of testing the application to marine propulsion of the Hon. Charles A. Parsons' compound steam turbine engine, has been taken from the *Newcastle Daily Chronicle* :—"The engine was already well known in its application for electrical driving, and the idea was happily conceived of using it as a motor for sea-going vessels. The Marine Steam Turbine Company was formed, and provided the necessary capital for testing the engine in a vessel, and the "Turbinia" was built and fitted with the compound steam turbine. Excellent results were anticipated in consequence of the recent development and improvement of the

steam turbine. Mr. Parsons, and those who joined him in the project, believed that the new system would revolutionise the present method of utilising steam as the motive power in ships, and that it would enable much higher rates of speed to be attained than had hitherto been possible with the fastest vessels. Their faith, thus far, has been amply justified in the result. The "Turbinia," which is of the nature of a torpedo-boat, has answered the expectations that were formed concerning her. She has attained at sea a greater speed than any vessel of her size has ever steamed, and possesses many advantages—especially in the lightness and compactness of her machinery—over other similar vessels. It is hoped, in time, that the compound steam turbine will take the place of the ordinary marine engine in fast passenger vessels, and ultimately in the "ocean tramp." If it should be so—and who shall say that it may not?—a wonderful change will have come over trans-marine voyaging; and it should be a source of gratification to Tynesiders that the new era should have been inaugurated on the banks of a river already famous, the world over, for its ships and engines.

Apart from its material aspect, and rather from an abstract point of view, the new departure is interesting, as marking what may be an entirely new epoch in steam navigation. In mechanics, as in natural history and all things else, the theory of evolution holds good. There is a continuous process of development, of advance from lower forms to higher; but in the sphere of mechanics it is more apparent than in life, because it is more rapid, and better ascertainable by comparison. It is a far cry from the primitive atmosphere engine that propelled the first paddle steamer to the huge quadruple expansion engine that is the triumph of modern design and workmanship; yet the one is the lineal descendant of the other. In view of the remarkably successful trials recently made with the "Turbinia" and her steam turbines, it is not venturing too much to suggest that the day of the multiple cylinder expansion engine may be nearing its end, and that the new motor may take its place. Indeed, the new turbine engine has passed the experimental stage, and has proved its superiority in all essentials over the older engines; the only requisite being to test its staying powers over a long voyage. A change from one method to another can only be justified by increased efficacy and economy—a greater productiveness without adding to the cost, and in this respect the claims of the steam turbine seem indisputable. It does more work than an ordinary marine engine of the same weight, at a much smaller cost; and this, in a sea-going vessel, has a double advantage, because it increases the carrying space, which is the main object in a steamer, whether she carries passengers or cargo. Greater speed is given as compared with the reciprocating engines, with a smaller consumption of steam per H.P. A new factor in marine propulsion is introduced by the propeller being driven at the enormous rate of 2,400 revolutions per minute, the highest rate up to the present being about 700 revolutions per minute; thus enabling both the shafting and propeller to be reduced accordingly. A screw-propelled steamer, fitted with the turbine engine, may be used for navigating shallow waters where at present only paddle steamers can be employed. Another advantage, and a very important one, is the reduction of the amount of vibration. This admits of a diminution in the weight of the hull, which under the present system must be built stronger and heavier than will be necessary under the new system. A further reduction in both friction and weight is obtained by the absence of the thrust block and its necessary heavy foundations; the steam pressure in the motor balancing the thrust of the propeller.

Mr. Parsons' compound steam turbine is well known, and has for some years been used as a motor where high speeds are necessary, as in electrical machinery. Its novelty now is in its application to the propulsion of a vessel. The difficulties in the way of making this application were great, but they have been successfully overcome. The turbine, in its elementary form, is exceedingly simple. There is a familiar mechanical toy, in which a small metal boiler is made to eject a tiny jet

of steam, which is impinged against the blades set in the periphery of a wheel. The impact of the steam repels each blade in rapid succession, and the wheel goes whizzing round, and sets a jointed figure dancing. Imagine a slender shaft running through and fixed to the centre of the revolving wheel, and a screw propeller at the end of it, and there is a simple form of steam turbine. But the engine designed by Mr. Parsons is a complicated and beautiful piece of mechanism. It is, in effect, a series of wheels, fixed and parallel, multiplying thousands of times the driving power of a single wheel. It consists essentially of two parts—first, an outer cylindrical casing, which is fixed, and an inner barrel, which is in effect a broad wheel, in motion, and has the propeller shaft running through it longitudinally. Projecting from the inner surface of the outer casing are parallel sets of fixed vanes, called guiding blades, and from the circumference of the barrel or wheel, are sets of blades; the former directing the motion of the steam towards the latter. In order to avoid shock in the diversion of the energy from the guiding blades to the moving blades, and to reduce the residual velocity of the power leaving the wheel, the parallel flow was adopted in the compound steam turbine, in preference to what is known as the outward or inward flow. The guide-blades are cut on the internal periphery of brass rings, which are afterwards cut in halves, and held in the cylinder by feathers; the moving blades are cut in the periphery of brass rings, which are afterwards threaded and feathered on to the steel shaft and retained there by the end rings, which form nuts screwed on to the spindle. The spindle and its rings rotate together in bearings. Steam is admitted at the inlet, flows to the right of the spindle, and passes along to the left, first through the guiding blades, by which it is thrown upon the moving blades. Then it goes on to the next guiding blades and is by them projected against the corresponding moving blades, and so on through the whole series, escaping at the end of the cylinder by an exhaust pipe. In the compound turbine, the velocity of the blades is sufficient to secure a very high return of useful effect. Each turbine gives an efficiency of at least 80 per cent. As each turbine discharges without check into the next, the residual energy, after leaving the moving blades, is not lost, as in the case of the water turbine, but continues to the next guiding blades and is wholly utilised in assisting the flow.

The "Turbinia" is now lying at Wallsend, where, by the courtesy of the Hon. C. A. Parsons, a representative of the *Chronicle* was permitted to examine her, outwardly and internally. She is a long, rakish-looking craft, being similar in dimensions and appearance to a first-class torpedo-boat of the British Service, and her neat lines instinctively suggest the idea of great speed. Her length is 100 feet over all; she is 9 feet beam, and has a displacement of 42 tons; and she is as sharp in the nose as it is possible to make her, the skin friction being reduced to a minimum. One is struck, at first glance, by the compactness of all her fittings. The "Turbinia" is, in effect, a steamer in miniature. In a torpedo-boat of the ordinary type, everything is sacrificed to engine space, and the machinery contributes most largely to the weight. But the engines of the "Turbinia" weigh only $4\frac{1}{2}$ tons; and there is room for a handsomely furnished cabin and lavatory forward and sufficient crew space at the after end. The engines are right at the bottom of the vessel, against the skin. The advantages of this are obvious, especially in a war-vessel. It gives greater steadiness, and obviates destruction of the machinery by an unwelcome shot. The total weight of machinery, including the boiler and condensers, is believed to be not more than two thirds of that of machinery of equal power of the ordinary kind and of the lightest manufacture. The enormous power necessary to drive the vessel through the water at the speed of 29·6 knots is obtained from only one water-tube boiler, with 1,100 square feet of heating surface and 42 square feet of grate surface, with the furnaces fired fore and aft from two closed stokeholds. The forced draught is obtained from a fan driven off the main engine. Our representative was informed that the turbine engines allowed for a total expansion of

the steam of a hundred-fold, instead of some sixteen-fold, as is usual in triple-expansion engines of the ordinary kind, and that in the case of some recent tests of Mr. Parsons, condensing turbine engines of 200-H.P., applied to driving dynamos, a steam consumption of less than 14 lbs. per I.H.P. had been recorded, with a boiler pressure of 80 lbs. per square inch, and that it was believed in the engines of the "Turbinia," developing many times this power, a greater rate of economy than this figure was realised. The boiler pressure in the case of the "Turbinia" is 225 lbs. per square inch, and the pressure at the turbines is 150 lbs. A noticeable feature is the absence of any special refinements, such as the use of aluminium to reduce the weight of any parts of the machinery or hull. The hull is made of steel, with the usual scantlings; and the vessel has already been out in rough weather, and proved herself to be a very good sea boat indeed. She registered a speed of no less than 29·6 knots per hour over the measured mile; and it is anticipated that, after some further slight alterations have been made, considerably increased rates of speed will be attained, since during the recent trials it was shown that a considerable reserve of power still remained to be called from the machinery. Every precaution seems to have been taken against breakdown. A great advantage consequent upon the lightness of the machinery is that duplicates of the parts can be carried, to be used in case of accident; and the "Turbinia" has duplicates of the feed and air-pumps, and also an auxiliary circulating pump. A steamer fitted with the compound steam turbine could hold almost everything in duplicate—everything, at least, which is liable to damage at sea. The "Turbinia" is divided into five water-tight compartments, any two of which will keep her afloat; and bilge ejectors are fitted to the chief compartments of the hull. The coal-bunker capacity, it is estimated, will give her a radius of action of 120 knots at a speed of 28 knots an hour, or a radius of 500 knots at a 10-knot speed; and, with extra coal stored on board, these distances may be considerably exceeded.

The merits of the new system may be summarised in the following ten desiderata:—(1) increased speed; (2) increased carrying-power of the vessel; (3) increased economy in steam consumption; (4) increased facilities for navigating shallow waters; (5) reduced initial cost; (6) reduced weight of machinery; (7) reduced cost of attendance on machinery; (8) diminished cost of up-keep of machinery; (9) largely reduced vibration; and (10) reduced size and weight of screw-propeller and shafting.

GENERAL.

The war-ships, exclusive of torpedo-boats, launched during the year 1896 for the various navies, with their tonnage, I.H.P., and estimated speed, were as follows:—

Great Britain.—First-class battle-ships:—"Mars," "Cæsar," "Illustrious," and "Hannibal," all of 14,900 tons, 12,000-I.H.P., and 17 knots speed. First-class cruiser:—"Diadem," 11,000 tons, 20,000-I.H.P., and 20 knots speed. Second-class cruisers:—"Arrogant," "Furious," and "Gladiator," of 5,750 tons, 10,000-I.H.P., 19 knots speed; "Dido," "Doris," and "Isis," of 5,600 tons, 9,600-I.H.P., and 19·5 knots speed. Third-class cruisers:—"Pelorus" and "Pactolus," of 2,135 tons, 7,000-I.H.P., and 20 knots speed. Torpedo-boat destroyers:—"Avon," "Bat," "Brazen," "Chamois," "Crane," "Desperate," "Earnest," "Electra," "Fame," "Foam," "Griffon," "Locust," "Mallard," "Recruit," "Star," "Vulture," and "Whiting," of 300 tons, 6,000-I.H.P., and 30 knots speed.

Argentine Republic.—Torpedo-boat destroyers:—"Santa Fé," "Corrientes," "Misiones," and "Entre Ríos," of 250 tons, 4,000-I.H.P., and 30 knots speed.

Austria-Hungary.—Coast-defence battle-ship:—"Buda-Pest," of 5,550 tons, 8,500-I.H.P., and 17 knots speed.

Brazil.—Second-class cruiser:—"Barrozo," of 3,500 tons, 7,500-I.H.P., and

20 knots speed Torpedo-cruisers :—“Caramuru” and “Tupy,” both of 1,030 tons, 6,000-I.H.P., and 23 knots speed.

Chili.—First-class armoured cruiser :—“Esmeralda,” of 7,000 tons, 18,000-I.H.P., and 23 knots speed. Second-class cruiser :—“Ministro Zenteno,” of 3,450 tons, 7,000-I.H.P., and 20 knots speed. First-class torpedo-gunboat :—“Almirante Simpson,” of 800 tons, 4,500-I.H.P., and 21 knots speed. Torpedo-boat destroyers :—“Capitan Munez Gamero,” “Capitan Orella,” “Teniente Serrano,” and “Guardia Marina Riquelme,” of 300 tons, 6,000-I.H.P., and 30 knots speed.

Denmark.—Coast-defence monitor :—“Skjold,” of 2,160 tons, 2,200-I.H.P., and 13 knots speed.

France.—First-class battle-ships :—“Amiral Bouvet,” of 12,200 tons, 14,000-I.H.P., and 17 knots speed; “Saint-Louis” and “Gaulois,” of 11,275 tons, 14,500-I.H.P., and 18 knots speed. First-class cruiser :—“D’Entrecasteaux,” of 8,114 tons, 13,500-I.H.P., and 19 knots speed. Second-class cruisers :—“Catinat,” “Cassard,” and “D’Assas,” of 3,952 tons, 9,000-I.H.P., and 20 knots speed.

Germany.—First-class battle-ship :—“Kaiser Friedrich III.,” of 11,000 tons, 13,000-I.H.P., and 18 knots speed.

Italy.—First-class armoured-cruiser :—“Carlo Alberto,” of 6,500 tons, 13,000-I.H.P., and 20 knots speed.

Japan.—First-class battle-ships :—“Fuji-Yama” and “Yashima,” of 12,600 tons, 13,690-I.H.P., and 18 knots speed.

The Netherlands.—Second-class cruisers :—“Friesland” and “Holland,” of 3,900 tons, 9,250-I.H.P., and 20 knots speed. Station-gunboat :—“Mataram,” of 810 tons, 1,100-I.H.P., and 13 knots speed.

Norway.—Torpedo-gunboat :—“Valkyrien,” of 380 tons, 3,300-I.H.P., and 26 knots speed.

Portugal.—Third-class cruiser :—“Adamastor,” of 1,750 tons, 3,000-I.H.P., and 18 knots speed.

Russia.—Second-class battle-ship :—“Rotislav,” of 8,800 tons, 8,500-I.H.P., and 16 knots speed. Coast-defence battle-ship :—“Admiral-General Apraxine,” of 4,126 tons, 5,000-I.H.P., and 16 knots speed. First-class armoured cruiser :—“Rossia,” of 12,200 tons, 17,000-I.H.P., and 19 knots speed. Second-class cruiser :—“Svetlana,” 3,711 tons, 8,500-I.H.P., and 20 knots speed. First-class gun-boat :—“Giljak,” of 960 tons, 1,000-I.H.P., and 12 knots speed.

Spain.—First-class armoured cruisers :—“Princesa de Asturias,” of 7,000 tons, 15,000-I.H.P., and 20 knots speed; “Christobal Colon,” of 6,840 tons, 14,000-I.H.P., and 20 knots speed. First-class gun-vessel :—“Dona Maria de Molina,” of 823 tons, 4,600-I.H.P., and 19 knots speed. Torpedo-boat destroyers :—“Furor” and “Terror,” of 400 tons, 6,000-I.H.P., and 30 knots speed.

Sweden.—Coast-defence battle-ship :—“Oden,” of 3,300 tons, 3,700-I.H.P., and 16 knots speed.

United States.—First-class battle-ship :—“Iowa,” of 11,410 tons, 10,000-I.H.P., and 16 knots speed. First-class gun-boats :—“Helena,” “Vicksburg,” and “Newport,” of 1,392 tons, 1,600-I.H.P., and 13 knots speed.

BRAZIL.—The Government are adding considerably to the fleet. Last month there was launched from the Elswick ship-yard a second-class cruiser named the “Amazonas,” a sister-ship to the “Barrozo,” launched by the same firm last August for the Government. The “Amazonas” is built entirely of steel and is sheathed with wood and copper. She is protected by a steel armour deck. The vessel will be fitted with machinery of 7,500-I.H.P., and is expected to attain a speed of 20½ knots with natural draught. The bunkers when full will carry 700

tons of coal, enabling the ship to traverse about 8,000 knots when cruising at a moderate speed. Her dimensions are :—Length, 330 feet ; beam, 43 feet 9 inches ; mean draught, 16 feet 10 inches ; displacement, about 3,450 tons. The armament will comprise six 6-inch Q.F. guns, four 4·7-inch Q.F. guns, ten 6-pounder Q.F. guns, four 1-pounder Q.F. guns, four Maxim guns, and three torpedo-tubes.

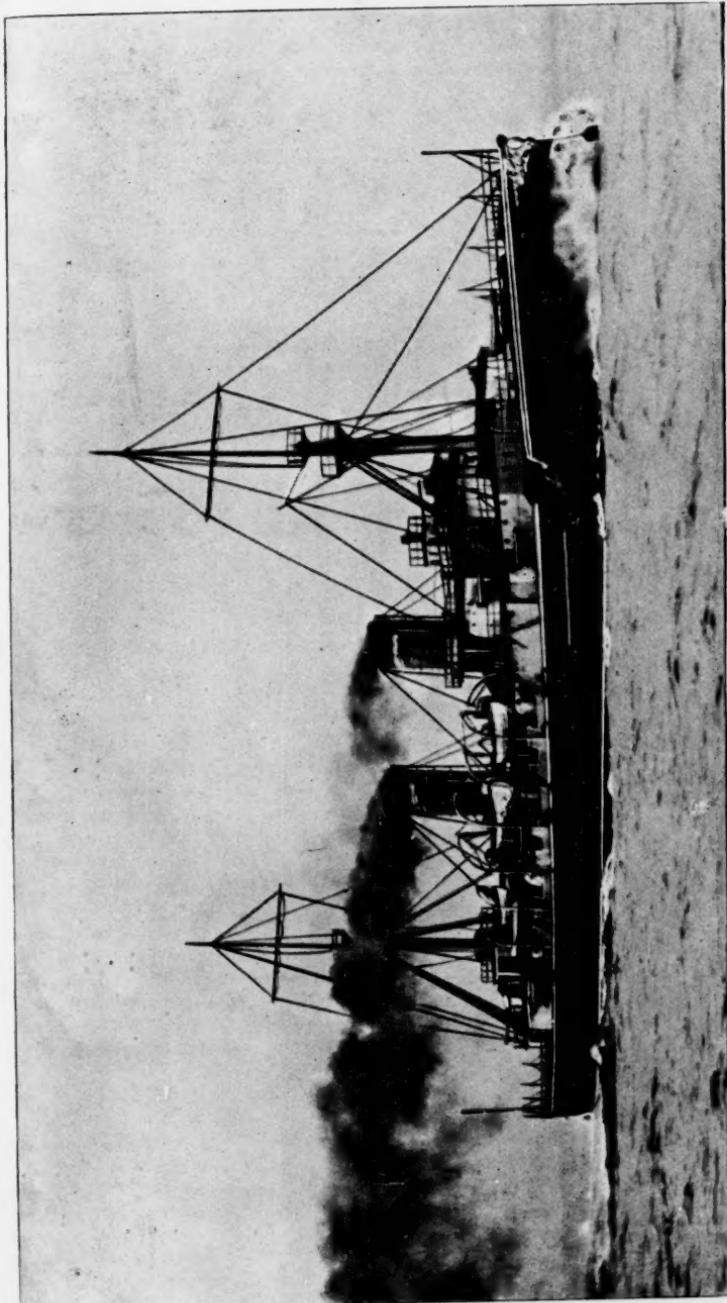
The new torpedo-cruiser "Caramuru," one of three building at the Germania Yard at Kiel for the Government, has lately completed her steam trials, when a mean speed of 22 knots was obtained. The following are the dimensions of the "Caramuru" and her two sisters :—Length, 255 feet 6 inches ; beam, 29 feet 6 inches, and with a draught of 9 feet 9 inches they have a displacement of 1,030 tons. The engines are to develop 6,000-I.H.P., giving a speed of 23 knots. The armament consists of two 4-inch, six 6-pounder, and four 3-pounder guns, all Q.F.s., with two broadside and one bow tube for 18-inch torpedoes. There are also two small battle-ships building at the La Seyne Yard, Toulon, two first-class torpedo-boats at Elbing, and two river monitors under construction at Rio de Janeiro.—*Mittheilungen aus dem Gebiete des Seewesens, and information supplied by Sir W. Armstrong and Co., Elswick.*

CHILI.—The new first-class cruiser "Esmeralda" has just been completed by W. G. Armstrong and Co., at Elswick, for the Chilian Government. She may, perhaps, be regarded as a very much improved "Blanco Encalada," which was completed in 1894 for the same Government. She has a much more powerful armament, greatly increased protection, greater speed, and a larger coal-carrying capacity than the last-named ship ; and now that she has satisfactorily passed through all her trials, and is lying ready to start for her destination, she must certainly be regarded as one of the most formidable cruisers afloat. A brief description will convince anyone of this who will take the trouble to compare her qualities with those of cruisers of the same and greater displacement belonging to other nations.

Her length between perpendiculars is 436 feet ; beam, 53 feet 2 inches ; mean draft, 20 feet 3 inches ; and a displacement of just over 7,000 tons. Her full coal supply is 1,350 tons, an amount which would enable her to cross the Atlantic at a speed of over 20 knots, and, of course, give her an enormous radius of action at more moderate speeds. The vessel is sheathed with wood and coppered. Her armament is as follows :—Two 8-inch Q.F. guns, placed one forward and one aft ; sixteen 6-inch Q.F. guns, four firing right forward and four right aft, and the remaining eight on the broadsides : eight 12-pounder Q.F. guns, ten 6-pounder Q.F., four Maxim guns, and three torpedo-tubes.

In addition to a curved protective deck, 1½ inches to 2 inches in thickness, extending over her whole length and covering all the vitals of the ship, she has over more than three-fourths of her length a belt of Harveyized armour 6 inches thick and 7 feet deep, terminated by armour bulkheads of the same thickness. Her conning tower, containing all apparatus for working and fighting the ship, is protected by Harveyized armour 8 inches thick.

The "Esmeralda" was commenced during the latter half of 1895, and she has been complete for some weeks, so that she has been considerably less than a year and a half in building—a remarkably short time for a vessel of her size and power. Her machinery, which has been supplied by Messrs. Humphrys, Tennant and Co., of Deptford, is of the four-cylinder vertical triple-expansion type, driving twin screws ; and the I.H.P., which was exceeded on trial, is 16,000 with natural draught. She is provided with forced draught, which would give her a power of 18,000 horses, but the Chilian Commission has been so satisfied with the results of speed and power attained with natural draught, that no use has been made of forced draught.



[See Page 90.

The New Chilean Armoured First-class Cruiser "ESMERALDA," 7,000 tons, 16,000 I.H.P.

From an instantaneous photograph supplied by Sir W. Armstrong & Co., Elswick.

J. J. K. & Co., London.

Her official steam trials took place in September, and consisted of a full-speed trial with natural draught, which lasted for six consecutive hours. During the trial, runs were taken on the measured mile, and a mean speed of over 23 knots was obtained with and against the tide, and the H.P. which gave this speed was maintained and part of the time exceeded during the six hours. In addition to the above, an endurance trial was taken lasting twenty-four hours, during which three-fifths of the full power, namely 10,800 horses, was maintained, giving the vessel a speed of over 20 knots per hour.

The gun-firing trials took place off the Tyne on the 16th ult., the guns and structure of the ship being put to the severest possible tests. The 8-inch gun and four 6-inch guns were fired simultaneously in the line of the keel and horizontally, the shot passing only a few feet above the deck over the admiral's state-room, and yet no damage was done. All the guns were also fired simultaneously by electricity, which is also used as the motive power for training the 8-inch guns and the hoists for the 8-inch and 6-inch ammunition.

All the trials were attended by the captain of the "Esmeralda," Captain Perez; and by Admiral Uribe, Chief of the Chilian Commission; by Sir E. J. Reed, also a member of the Commission, who has supervised and assisted in the construction of the vessel; and by numerous Chilian officers and members of the Elswick firm.

It may, perhaps, be mentioned that the vessel is lighted throughout by electricity, and that all fittings, etc., are of the best quality, and that the cabins and living spaces generally have the most comfortable and luxurious appearance.

When the "Esmeralda" leaves the Tyne she will be accompanied by the second-class cruiser "Ministro Zenteno," which has also been built by the Elswick firm for this Government. She is 330 feet in length, by 43 feet in beam, by 25 feet in depth, and has a displacement of 3,450 tons, on a mean draught of 16 feet 10 inches. Her armament, wholly upon the Q.F. principle, consists of eight 6-inch, ten 6-pounders, four 3-pounders, and four machine guns, with three torpedo-tubes. The machinery comprises two sets of triple-expansion engines, capable of developing collectively 7,000-H.P. under forced draught, the resulting speed being estimated at 20 knots.

Another first-class cruiser, the "O'Higgins" is also being constructed at Elswick for the Government. Her dimensions are as follows:—Length, 412 feet; beam, 62 feet 9 inches; and displacement, 8,500 tons. She is being built of steel, with a powerful ram stem, and the hull is to be sheathed with teak. The engines will drive twin screws, the collective I.H.P. being estimated at 16,500, which is to give a speed of 20 knots; and steam is supplied from a battery of Belleville tubulous boilers. The "O'Higgins" will carry four 8-inch breech-loading weapons, ten 6-inch Q.F., four 4-7-inch Q.F., ten 12-pounders, ten 6-pounders, and four Maxim machine guns, besides three torpedo-tubes.

During the last three months the trials of the four torpedo-boat destroyers built for this Government by Messrs. Laird, of Birkenhead, have been successfully completed. These vessels are named the "Capitan Orella," "Capitan Munoz Gamero," "Teniente-Serrano," and "Guardia-Marina Riquelme" respectively, and in design and arrangement are similar to the 30-knot torpedo craft building in various establishments throughout the country for the British Navy. They have a displacement of 300 tons, and are 213 feet in length, with a beam of 21 feet 6 inches. They are provided with engines of 6,000-H.P., and are fitted with water-tube boilers. The "Capitan Orella" was the first completed, when her guaranteed speed of 30 knots was slightly exceeded. The mean speed obtained on six runs over the measured mile was 30·17 knots with 361 revolutions, and the mean for the three hours' run was 30·23 knots with an average of 362·5 revolutions and a steam pressure of 215 lbs. The mean speed on the measured mile of the "Munoz Gamero" was 30·42 knots with 369 revolutions, and the mean of the three

hours' run was 30 knots with 364 revolutions and a steam pressure of 214 lbs. The mean speed of the "Teniente-Serrano" on the measured mile was 30.34 knots with 371 revolutions, and 30.25 knots on the three hours' run with 370 revolutions and a steam pressure of 216 lbs.; while the fourth, the "Guardia-Marina Riquelme," gave a speed of 30.09 knots on the measured mile with 362 revolutions, and 30.12 knots on the three hours' run with 362 revolutions and a steam pressure of 215 lbs. All four vessels have a bunker capacity of 90 tons, with a radius of action of 3,500 knots at 13 knots speed. The armament consists of one 12-pounder Q.F., five 6-pounder Q.F. guns, and two 18-inch torpedo-tubes, each mounted on pedestal and racers. They have a complement of sixty-five officers and men.—*Details supplied by Sir W. Armstrong and Co., Elswick, and Messrs. Laird Bros., Birkenhead.*

FRANCE.—The following are the principal promotions and appointments which have been made: Rear-Admiral—P. M. Ménard to Vice-Admiral. Capitaine de Vaisseau—P. A. Bellanger to Rear-Admiral. Vice-Admiral—P. M. Ménard to be Préfet Maritime of the 3rd Arrondissement Maritime at Lorient. Rear-Admiral—C. H. Godin to command 2nd Division of Squadron of Reserve of the Mediterranean. Capitaines de Vaisseau—J. A. A. Fort to "Duguay-Trouin" and command of Naval Division of the Pacific; J. Parfait to "Bruix"; A. J. Bernard to "Descartes"; E. L. Ternet to "Friedland." Capitaines de Frégate—Despréaux de St. Sauveur-Bougainville to "Cosmao"; L. A. Texier to "Éclaireur"; P. P. A. Lecuve to "Eure"; J. G. Rabonin to "Aube."

The first-class battle-ship "Carnot" has been continuing her trials at Toulon. During a six hours' natural-draught trial, the engines developed 11,547-I.H.P., making 98 revolutions and giving a mean speed of 17.5 knots; she left Toulon again on the 20th ult. for her forced-draught trials, but returned again in the afternoon, owing to defects in her boilers, which prevented the trial being carried out; in view of the fact that the ship draws more water than was contemplated in her design, her after military mast is to be removed and other alterations made. The new first-class battle-ship "Charles-Martel," when leaving her anchorage at Brest on 22nd December to continue her trials, struck what was supposed to be some sunken wreckage, but which has since been discovered to be a conical rock not marked in the chart, and situated in the "goulet"; two blades of the port propeller were seriously damaged, but the hull is uninjured. The new second-class cruiser "Descartes," having completed her trials, commissioned on the 15th ult., and proceeds to China to relieve the first-class cruiser "Alger," which will return to Toulon to pay off. The preliminary trials of the cruiser "Pothuau," which had been interrupted by a defect in the starboard condenser, were brought to a satisfactory conclusion at Cherbourg on 24th December, 1,200-H.P. being realised. The new second-class cruiser "Pascal" has also been continuing her trials off Toulon; and during her four hours' run under forced draught, with the engines developing 8,720-I.H.P., with 130 revolutions, she maintained a mean speed of 19.7 knots. The new first-class armoured cruiser "Bruix," having completed her trials, has joined the Squadron of the North, being attached to the 1st Division. The repairs to the "Formidable" are being pushed on; it has now been decided that the four 6-inch Q.F. guns, which are taking the place of the central 75-ton gun, are to be in a battery instead of armoured turrets, as was first proposed.

The following changes are to be carried out during the present quarter:—At Cherbourg, the aviso "Manche" will commission on the 1st March for service in Iceland; the third-class battle-ship "Turenne" will be placed, after repairs, in the second category of the Reserve; the torpedo-cruiser "Fleurus" after her trials will be attached to the Squadron of the North; the new second-class cruiser "Du Chayla" will commission with reduced complement for her trials. At Brest, the third-class cruiser "Éclaireur," having received new boilers, will make her

trials and then be placed in the Reserve ; the new armoured coast-defence ship "Amiral-Tréhouart," after completion of her repairs, will commission with reduced complement and join the Squadron of the North, while the new second-class cruiser "D'Assas" will commission with reduced complement for her trials. At Lorient, the third-class cruiser "Lacocheterie" will commission on 1st April for service on the Newfoundland fisheries, while the aviso "Bengali" will also commission on 1st April and proceed to Saigon, where she will join the Reserve at that port. At Rochefort the aviso "Scorff" will pay off from the Pacific, her place being taken by a similar vessel, the "Eure," which commissioned on the 1st inst. ; the new third-class cruiser "Galilée" will also commission for her trials with a reduced crew. At Toulon the first-class battle-ship "Amiral-Baudin" will be detached from the Active Squadron of the Mediterranean Fleet and pay off into the 2nd Division of the Reserve, when she will have new boilers, and her 75-ton gun amidships with its barbette removed, four 6-inch Q.F. guns in an armoured battery taking its place ; the aviso "Chimère" is to commission for surveying service ; the gun-boat "Étoile" will commission for service at Constantinople, and the first-class armoured cruiser "Chanzy" will commission with a complement on the footing of *effectif d'essais*.—*Le Yacht* and *Moniteur de la Flotte*.

The following is the text of M. Lockroy's amendment to the Naval Estimates, referred to in last month's Notes :—

1. To add to the estimates a chapter 27 bis, entitled "Repairs to naval material and new constructions, 50,000,000 francs."
2. Introduce in the budget the following :—"A sum of 200,000,000 spread over the years 1897, 1898, 1899, and 1900, will be devoted to the repairs of naval material and new constructions."

In proposing this amendment in the Chamber on 15th December, M. Lockroy stated that it was necessary that steps should be taken at once to make the ships of the fleet efficient, particularly as regards their boilers.

In a general way his speech received the approval of Ministers and the Chamber, the Minister of Marine stating that the "Conseil supérieure de la Marine" was about to be called together to draw a programme of repairs for the fleet ; but Admiral Besnard also showed that it was not possible at present to spend the 50,000,000 francs proposed by M. Lockroy, the arsenals only being able to undertake a certain quantity of work at a time, and the private yards being well supplied at present with foreign orders ; while as regards the boilers, there could be no question as to its being unadvisable to change the boilers of a number of ships at the same time, as having so many ships under repair at once might become a serious matter for the country.

After this explanation by the Minister of Marine, the force of which was felt by the Chamber, M. Lockroy's amendment was rejected by a large majority, the Government engaging to present in January a well-considered programme of repairs, and at the same time to inform the Chamber what further expenses this will entail, and their proposal as to how the money is to be provided.

On Chapter 40 of the estimates, "Defence works of the maritime ports," Admiral Vallon proposed to increase the vote by 2,500,000 francs to finish the defence jetties at Cherbourg and Brest, stating that if these protections were not completed, vessels coming for shelter or repairs to those military ports in time of war would be at the mercy of an enemy's torpedo flotilla.

Admiral Besnard replied that he did not see his way to proposing the increase asked for at present, the Chamber having already voted 24,000,000 for works at Brest, Cherbourg, and Toulon. The Government, however, proposed to submit to Parliament a report on the matter, with the cost of the proposed work ; but no increase in the estimates would at any rate be asked for during 1897.

Admiral Vallon then withdrew his amendment.—*Le Temps*.

UNITED STATES.—The Secretary of the Navy, in his annual report, refers to the work of naval construction so happily begun by Mr. Chandler, so wisely extended and broadened by Mr. Whitney, and continued with marked ability by Mr. Tracy. Despite their energy and ability, not one of the vessels was in commission for active service when the present Administration began its work. Still, the force of cruisers was relatively far in advance, and the policy of the Navy Department has been to build battle-ships, torpedo-boats, and light-draught boats for special service in our own and foreign waters.

"Since 4th March, 1893, Congress has authorised the completion of the following vessels under contract, to be completed at the dates named:—

1896.—Three torpedo-boats of 24·5 knots speed, and 142 tons displacement; two torpedo-boats of 27·5 knots speed, and 182 tons displacement.

1897.—One submarine torpedo-boat, 8 knots, 168 tons; one torpedo-boat, 26 knots, 182 tons; two torpedo-boats, 30 knots, 146 tons; one, 30 knots, 276 tons; two, 22·5 knots, 117 tons; one torpedo-boat, 22·5 knots, 103 tons; two torpedo-boats, 20 knots, 47 tons; two torpedo-boats, 20 knots, 65 tons. In all, sixteen torpedo-boats, with an aggregate of 2,098 tons and 38 tubes, four having two tubes each and the others three. They carry altogether thirty-eight 1-inch Q.F. guns.

In 1897 are also to be completed six gun-boats of 1,000 tons each, having 12 knots speed and six 4-inch Q.F. guns each; in all twenty-four guns.

In 1899 will be completed the "Kearsarge," "Kentucky," "Illinois," "Alabama," and "Wisconsin," five vessels of 11,250 tons each, and having 16 knots speed. Two of these carry four 13-inch B.L.R., four 8-inch B.L.R. and fourteen 5-inch Q.F. guns. The other two carry four 13-inch B.L.R. and fourteen 6-inch Q.F. guns. This shows a grand total of 65,866 tons. Altogether twenty-eight vessels have been authorised since 4th March, 1893, their displacement, armament, etc., being distributed as follows:—

Class.	No.	Total displacement.	Aggregate main batteries.
Battle-ships ...	5	57,600 tons	20 13-in. B.L.R.
			8 8-in. B.L.R.
			42 6-in. Q.F.G.
			28 5-in. Q.F.G.
Light-draught gun-boats...	6	6,000 tons	36 4-in. Q.F.G.
Torpedo-boats ...	16	2,098 tons	44 torpedo-tubes
Submarine torpedo-boats...	1	168 tons	2 torpedo-tubes
	28	65,866 tons	

This is a good beginning, but it is not sufficient. During the present Administration there will have been placed in commission 3 first-class and 2 second-class battle-ships, 2 armoured-cruisers, 4 double-turreted monitors, and 1 harbour defence ram, making a total of 12 new armoured vessels, having aggregate displacement of 81,517 tons. In addition to the above-mentioned armoured ships, 8 cruisers and 3 gun-boats will have received their first commission, making a grand total of 23 vessels, with an aggregate displacement of 118,184 tons, placed in commission during Mr. Cleveland's term of office, this being by far the largest amount of tonnage put in commission during any Presidential administration since 1865.

Since March, 1881, the following tonnage has been authorised, begun, or placed in commission:—

	Authorised.	Begun.	Commissioned.
1881-85	23,076	12,363	...
1885-89	67,183	34,814	7,863
1889-93	66,618	93,164	54,832
1893-96	65,942	80,778	118,184

Since the last annual report eight vessels have been completed, accepted, and added to the Navy, viz.: "Monadnock," "Terror," "Indiana," "Massachusetts," "Oregon," "Katahdin," "Ericsson," and "Brooklyn."

The following table is given, showing the present strength of seven principal navies:—

Class.	England.			France.			Russia.			Italy.			Germany.			United States.			Spain.		
	Built.	Bldg.	Total.	Built.	Bldg.	Total.	Built.	Bldg.	Total.	Built.	Bldg.	Total.	Built.	Bldg.	Total.	Built.	Bldg.	Total.	Built.	Bldg.	Total.
Battle-ships—																					
1st Class	22	12	34	10	8	18	5	6	11	7	2	9	4	2	6	3	6	9	1	1	
2nd Class	12	11	23	1	1	12	5	2	7	2	1	7	4	2	7	2	1	2	1	1	
3rd Class	11	9	20	2	2	4	5	3	8	5	2	7	3	3	3	2	2	2	2	2	
Total	45	12	57	23	9	32	10	8	18	15	2	17	14	2	16	5	6	11	3	3	
Coast-Defence Ships																					
Cruisers—																					
Armoured	16	16	32	9	1	10	9	1	10	1	5	6	1	1	1	2	2	3	4	7	
1st Class	11	10	21	2	4	6	2	...	...	...	...	1	1	1	3	3	3	1	1	1
2nd and 3rd Class	51	24	75	10	9	19	3	1	4	16	1	17	3	5	8	13	13	7	7	7	
Look-out Ships or Gun-boats																					
...	19	...	19	12	...	12	...	...	...	...	...	11	1	12	9	9	18	22	...	22
Torpedo Gun-boats																					
...	34	...	34	12	3	15	8	...	8	15	2	17	9	1	10	...	...	3	4	7
Torpedo - boat - destroyers																					
...	98	...	98	3	...	1	...	1	...	1	...	11	1	1	1	...	1	...	2	2	
Torpedo-boats																					
...	160	...	160	241	...	161	...	176	...	145	...	3	15	18	19	4	23	...	23	...	

Our obligations and duties on this hemisphere are recognised by the world, and can not be met unless we are possessed of naval strength. If our merchant marine increases as it should, and no doubt will, the present naval strength will be very far from what it should be. Nothing will so surely make for peace and give us weight abroad and security at home as a substantial navy constructed of the best materials and manned by the highest intelligence and skill.

Reforms in Naval Administration.—Mainly by departmental orders the important reforms of defects in the bureau system were accomplished under Mr. Whitney in placing the entire *personnel* under the Bureau of Navigation and consolidating under the new Bureau of Supplies and Accounts the purchase of supplies, pay of the Navy, and rendering of all accounts. Mr. Herbert went a step further, and by G. O. No. 433, October 2nd, 1894, placed upon the Bureau of Construction and Repair the responsibility for the designs, structural strength and stability of vessels built for the Navy. This order was intended to secure harmony in the designs of new vessels, and it definitely fixed the responsibility for and mode of procedure in making changes from original plans. The Bureau of Construction and Repair was to be, unless its recommendations were overruled by the Department, responsible for the resultant general effect upon the ship of every change that might be made after the designs were approved. One of the most important effects of this order was to concentrate under one head full information as to changes authorised to be made in a ship from its beginning to its completion, and to fix responsibility for the proper correlation of work. Two years of practical experience under the provisions of this general order have demonstrated fully its wisdom, and the Department is now in a position to feel perfect confidence as to the ultimate results to be obtained from new designs, and can fix most definitely responsibility for any failure therein. As an example showing the smoothness with which the bureaus concerned in the construction of a ship are

now co-operating, I may advert to the following facts:—The Act authorising the construction of battle-ships "7," "8," and "9" contained the very unusual provision that the contract for their construction should be signed within 120 days from the date of passage of the Act. This Act was approved June 10th, 1896. On June 11th the Department approved the report of a Board which had been previously appointed to pass on the general features of the prospective battle-ship designs, and on the same day ordered the Bureau of Construction and Repair to prepare circulars defining the chief characteristics of the battle-ships and torpedo-boats authorised by the Act.

The circular proposals for the torpedo-boats were issued on June 17th, 1896, and those for the battle-ships on June 22nd, 1896. The actual work of preparing designs was prosecuted by the Bureau of Construction and Repair with such dispatch, that under date of August 28th—only fifty-eight working days after the Department had ordered the designs—the first set of plans and specifications was ready for issue to prospective bidders.

At the Navy Yard, Norfolk, a dry dock of sufficient size to take in the longest, widest, and deepest-draught ships is very much needed. It is, therefore, recommended that a dock of the following dimensions be appropriated for at that place: Length on floor, clear, 650 feet; width of entrance, 100 feet; depth at mean low water, 30 feet. This dock the Department recommends to be built of concrete, which possesses advantages over stone, first, in that the structure would be a monolith; second, more readily repaired; third, much cheaper. Its advantages over wood are durability and dryness. Estimated cost \$1,000,000.

Our experience shows that the timbers in wooden docks above the permanently wet level rot in a very few years, that all of the altars, which are alternately wet and dry, decay rapidly, and that the timbers at the entrance are particularly liable to destruction from the "teredo." The outer sill of the Simpson Dry Dock, at Norfolk, V.A., which was of creosoted oak, has been entirely destroyed by the "teredoes." This dock was opened September 17th, 1889. Attention is called to the channel leading to the Norfolk Navy Yard. This channel is now only being dredged to a depth of 25 feet at low water, which is insufficient for ships that draw, as some of ours do, 27 feet when fully loaded. It is suggested that steps be taken to have a channel at least 300 feet in width dredged to a depth of 30 feet at low water.

Increase of the Navy.—When the Department undertook in 1892 the task of laying down battle-ships, the draughts of the "Indiana" and "Columbia" classes having been brought to its attention, the Bureau of Construction was directed to prepare plans for the new vessels that should give them 2 feet less draught. It was urged that there were difficulties in the way, but the order was insisted upon and carried out. The battle-ships laid down during this Administration are, therefore, of lighter draught than those previously designed proved to be when completed, being 23 feet at normal and 25 feet at extreme draught. This step, which was in the right direction, it now appears did not go far enough, or perhaps it would be fairer to say that the battle-ships heretofore laid down, while adapted to the defence of the Atlantic and Pacific coasts, are not so well suited for operations in the Gulf of Mexico. Attention is called to the following recommendations from the president of the War College:—

"The close study of the Gulf of Mexico which has been carried on by the Department's orders during the last year shows it to be essential to the success of defensive naval campaigns that we shall be able to use for our fighting-ships those harbours which Nature has provided. Although possessing bases for fleets in that region, the fact that there is not enough depth of water for our fighting-ships to enter them will render them of but slight benefit to us. It is submitted, further, that the artificial deepening of channels and entrances is not a good solution of this difficulty, because such dredged channels are of necessity narrow, easily

blocked, and very sensitive to injuries from an enemy or the elements. The effort to remedy a shoal entrance by dredging a narrow channel across the bar seems unwise as far as naval and military questions are concerned, and the true remedy, in the opinion of the War College, lies in decreasing the draught of the war-ships to a point permitting them to enter. The college therefore respectfully suggests that future ships-of-war be planned for an extreme deep-load draught, with maximum coal supply on board, of 23 feet, and submits that considerations of strategy upon our Atlantic and Gulf coasts render this an essential to successful naval campaigns."

This reasoning is the final result of much careful study by able officers of conditions as they exist on our southern coast. Battle-ships that could enter the harbours of Savannah, New Brunswick, Key West, Tampa, Pensacola, Mobile, and the mouth of the Mississippi at all times would have an immense advantage over the battle-ships of foreign nations, few, if any, of which could enter these ports. Light-draught battle-ships, if we had them, could make any of these ports bases of supply, could sally forth from them or retire into them at will, and could therefore almost always offer battle on their own terms. There are also many of our ports farther north which would give the same advantages to such ships. I therefore recommend the authorisation at the coming session of Congress of three such battle-ships. The tables of the comparative strength of the navies of the world heretofore quoted clearly show that we are still quite deficient in torpedo-boats. Very many of the naval Powers of the world, which are in other respects much weaker than we, have two or three times as many torpedo-boats. I respectfully recommend the authorisation of twelve torpedo-boats at the coming session of Congress."

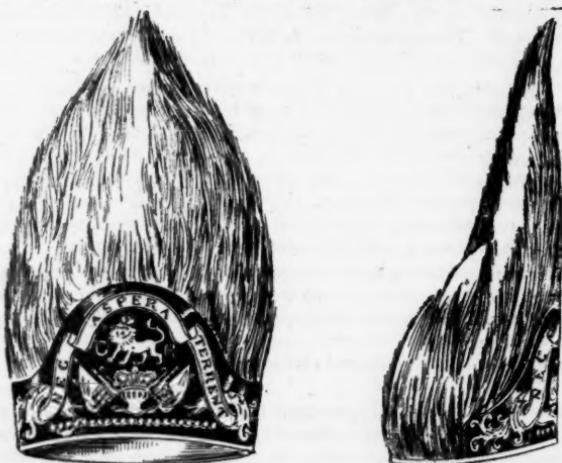
MILITARY NOTES.

PRINCIPAL PROMOTIONS AND APPOINTMENTS DURING DECEMBER.

Lieut.-General G. Mairis, Royal Marines, to be General; Major-General A. F. Hamilton, R.E. (late Madras), to be Lieut.-General; Colonel C. Strahan, R.E. (late Bengal), to be Major-General; Surgeon-Colonels C. MacDonogh Cuffe, C.B., and H. S. Muir, M.D., to be Surgeon-Major-Generals; Lieut.-General Hon. C. W. Thesiger, from the 5th (Royal Irish) Lancers, to be Colonel of the 14th (King's) Hussars; Lieut.-General W. G. Dunham Massey, C.B., from the 4th (Royal Irish) Dragoon Guards, to be Colonel of the 5th (Royal Irish) Lancers; Lieut.-General H. C. Wilkinson, C.B., to be Colonel of the 4th (Royal Irish) Dragoon Guards; and Major-General and Hon. Lieut.-General E. Chippendall, C.B., to be Colonel of the Princess of Wales's Own (Yorkshire) Regiment; Major-General W. O. Barnard to command the 2nd Infantry Brigade, Aldershot; General J. J. H. Gordon, C.B., Indian Staff Corps, to be member of the Council of India.

Caroline, Countess of Seafield, has lately presented to the Royal United Service Institution two bearskin Grenadier caps, which were worn in the British Army at the end of the last century. But before describing these caps, it may be interesting to trace the history of the Grenadier cap. Grenadiers were first introduced into the British Army in 1677, and they were provided with fur caps with hoods, believed to have been borrowed by Continental armies from the Turks. Evelyn, in his diary in 1678, says:—"Now were brought into service a new sort of soldiers, called Granadeers, who were dexterous in flinging hand-granades, every one having a pouch full; they had furred caps with copped crowns, like Janizaries, which made them look very fierce, and some had long hoods hanging down behind, as we picture fools." These fur caps soon gave place to cloth ones, the

hood being still retained, but curtailed. This cloth cap was adorned with the Royal cypher or other ornament, and was permitted to be worn by Fusiliers also. By 1715 the hood had altogether disappeared from the cap, which was handsomely embroidered in front. This cap, afterwards reduced in height, must be familiar to those who have seen Hogarth's picture of the March of the Guards to Finchley. A fine specimen of the cloth Grenadier cap, as worn during the Seven Years' War, is preserved in the museum of this Institution, and was worn by a subaltern in the South Hants Militia. The cloth Grenadier cap was superseded in 1765 by the bearskin cap here depicted. It has a black japanned plate in front, on which



appears the King's crest and the motto "Nec Aspera Terrent" in white metal; caps of this description were worn by the Grenadier companies of the Line and Militia until the end of the eighteenth or commencement of the nineteenth century. The particular caps lately presented by Lady Seafield were worn by the Grenadier company of the old Strathspey Highlanders, or Grant Fencibles, a regiment raised in 1793 by Sir James Grant, Bart., of Castle Grant, Morayshire, and disbanded in 1799.

With reference to the remarks made in the November number of this JOURNAL, p. 1398, on the system of mounting the gunners on the off-lead and off-centre horses, Lieut.-Colonel Spencer Gardiner, late commanding Royal Artillery, Exeter, has kindly contributed the following remarks on the experiment as carried out by T Battery, 2nd Brigade Field Artillery, at Exeter, under his orders in 1889:— "The trial was made under my directions, with a result most satisfactory both in regard to moving and bringing the guns into action more expeditiously: the gun members taking post on the gun in action with less confusion from coming up more diffusely. The gunners mounted on the off horses were bombardiers and acting-bombardiers, on account of their having a mounted kit and being accustomed to ride. They held the bearing-rein let out to its full, but had nothing to do with the driving, which the driver *proper* was responsible for; and no confusion ensued in manoeuvring.

"In 1885, when commanding P Battery, 2nd Brigade, I had marched from Aldershot to Hay with men on the off horses (except the shaft horse), in order to take as many men as possible on the road; but on coming back reverted to the regulation system. The contrast was very marked in the way the horses worked, and in their freedom from sores, chafes, and galls when the off horses were ridden.

The idea that the horses in the Bengal Horse Artillery were ridden because the horses were entire horses, is, I believe, quite mythical ; the real reason being that it was a much less expensive and more useful way of carrying the gunners, with less confusion both moving and in action, with fewer to feed in the way of forage —a matter of no small consideration."

In the November and December numbers of this JOURNAL, pp. 1399 and 1533, allusions were made to the new Lee-Metford bullet, adapted from a sporting bullet at Dum-Dum by Captain N. S. Bertie-Clay, R.A., superintendent of the Small Arms Factory, but the merit of which has been claimed by Major-General M. Tweedie, late R.A. The following is a verbatim report of the lecture delivered at Meerut, on the 11th ult., by Colonel W. Hill, A.A.G. for Musketry, in India :—

"I am not going to give you a musketry lecture, or ask you anything about the parabolic curve of the trajectory. I have invited you to meet me here that I may explain to you what has been done, and is being done, with regard to the experiments with bullets for the '303 rifle. It is perfectly well known to the man in the street that the British regiments in the Chitral Expedition rightly or wrongly came to the conclusion that the present Service bullet, while being very accurate and having great penetration, was wanting in stopping power, and that it would be likely to fail in stopping a rush of fanatics or a charge of cavalry.

"This loss of confidence by the soldier in the power of his rifle was so far recognised officially, that sanction was given to the British soldiers to file down the points of their bullets, with a view to weakening the forepart of the bullet and to give it a better chance of setting up or mushrooming on impact. No one, I think, will admit that the tinkering of the ammunition by the soldiers on service was an edifying sight.

"However, the Ordnance Department took the matter up at once and first tested the ammunition as altered by the soldiers, and found it most inaccurate, and that, moreover, the alteration prevented the magazine from feeding properly.

"Then every description of sporting bullet that could be bought in the market was tried, and one and all failed for accuracy, except at short ranges. The Ordnance Department then made up a bullet, which seemed satisfactory and gave good results up to 500 yards, but on testing it at 1,000 yards this also failed. Eventually Captain Bertie-Clay, R.A., made up at the Dum-Dum Small Arms Ammunition Factory a bullet which gave sufficiently good results to justify a more exhaustive trial, and this is the bullet we have before us. We have tried it first for accuracy and ranging power, and find it shoots every bit as well, if not better, than the Service bullet, with the same elevation at all ranges, the same velocity, and the same low trajectory. Then we had to test it carefully as to its setting-up power. These experiments are not yet complete, but we have made considerable progress towards completion. The Government of India desire to have a very thorough trial of the bullet carried out by the Army, and the Commander-in-Chief has directed that the opportunity of having so many of the best shots here should be taken advantage of, and such experiments carried out as may be of interest to you and through you to your regiments.

"Now to explain what the bullet is :—Here are two specimen cases showing the various stages of manufacture of the Service bullet and the modified bullet, and for convenience of distinction I will call them the old bullet and the new bullet. You will notice that the old and the new bullet are made exactly alike in the first five or six stages—the sixth stage of manufacture of the old bullet is the pointing of the nickel case to form the point of the bullet, but in the new bullet this is squared off to form the base ; and when in the next stage the lead is put into the cupro-nickel shell it goes in from the base of the old bullet and from the front of the new bullet. In appearance the two bullets are identical, the fact that the lead is exposed at the point is hardly noticeable, but when you come to examine the

sections of the two bullets, you see that whereas in the old bullet all the strength is in the point, the point of the new bullet is its weakest part. That the base of the old bullet is the weakest part is curiously exemplified by these bullets fired into a bag of coal. In every case the base of the bullet is crushed flat; why this should be so I am unable to say. I have not got the same result when firing into anything except coal, but I hear it sometimes happens when firing into water.

"To-morrow you will see the main differences that characterise the two descriptions of bullets when fired into objects with more or less resistance.

"Here are some bullets of both kinds fired into the same object, from the same distances and the same rifles. There are bullets here which you can come and examine for yourselves that have been fired into earth and timber, brick, coal, sawdust, and water, and in every case the setting-up of the bullet is very marked.

"As regards the penetration of the new bullet, it naturally follows that as the setting-up increases the penetration decreases; you can't have both fully developed in the same bullet. I suppose if you could make a bullet to open out in its flight like a parachute, the penetration would be reduced to *nil*. But no bullet will be of any use for military or sporting purposes that goes to pieces on the surface of an animal, or that won't penetrate a great coat. What we want, and what is so difficult to get, is a happy medium—just enough penetration and enough setting-up. I rather think this new bullet gives us what we want.

"Here is a $\frac{1}{2}$ -inch iron plate that has been used for field firing, and similar to those used the other day in the extended order matches for General Morton's prizes. At 150 yards the new bullet goes through this plate, and so of course does the old bullet, but the new one makes a hole twice the diameter that the old bullet does. We will borrow some of these iron plates to-morrow morning and let me put a B. P. R. A. mark on them which will be hard to put out.

"From the experiments that I have personally conducted at animate and inanimate objects, I do not hesitate to aver that I would rather be hit by two Martini-Henry bullets than by one of these .303 bullets. I know the bullet to be a very accurate military bullet, and I think it a very efficient sporting bullet for all game, from elephants to ravine deer. In short, I regard the .303 rifle with the modified bullet as the most efficient and deadly weapon that any one could desire with which to meet his enemy, whether man or beast, and I consider that armed with them the British soldier will have in his hands the best rifle and most efficient bullet in the world."

On the following day practical experiments were carried out before the Commander-in-Chief and other officers, when the results fully bore out what had been urged by Colonel Hill.

So many questions have been asked by members consulting the library of the Institution as to the strength and composition of the Canadian military forces, that it may be well to give the latest information on the subject obtainable.

By the Union Act, 1867, the command in chief of all naval and military forces of and in Canada is vested in the Queen, and the control of the same is placed in the Parliament of Canada. The officer now commanding Her Majesty's forces there is Major-General W. J. Gascoigne, late Scots Guards, commanding the Militia of the Dominion; with Lieut.-Colonel P. H. N. Lake, *p.s.c.*, East Lancashire Regiment, as Quartermaster-General. Major-General Gascoigne's predecessors in the command of the force were Colonel P. L. McDougall, 1865-1869; Colonel P. Robertson Ross, 1869-1873; Major-General E. Selby-Smyth, 1873-1880; Major-General R. G. A. Luard, 1880-1884; Major-General F. Middleton, 1884-1890; Colonel Walker Powell, 1890; and Major-General Ivor Herbert, 1890-1895.

The record of the service of the Militia of the Dominion dates back to 1648, when a few companies were organised out of a population of about 1,000 souls. In 1665 the system was further developed. In 1674 the Count of Frontenac gave it a definite form, and from that time to the capitulation of Montreal in 1760 the

Militia took part in several wars and gained considerable distinction. After the conquest it was entirely disbanded, but a kind of re-organisation took place in 1775 at the approach of the Republican Army commanded by Major-General Richard Montgomery and Benedict Arnold ; but there was very little done after that date until 1812, when the Militia was again organised and equipped, and, with the few British Regulars then in the country, defeated the United States Armies at Detroit, Queenstown Heights, Lundy's Lane, Chryshter's Farm, Chateauguay, etc. After 1815 the force, with the exception of a few regiments, was, for all practical purposes, disbanded, and no demand for its services was made until the Rebellion of 1837-38. On that occasion, at the call of the authorities, numerous corps were hastily organised, and acted in concert with the Regulars. As soon as the Rebellion was over these corps, with few exceptions, were disbanded, and Upper and Lower Canada continued to be garrisoned by the Regulars.

In 1855, after the departure of most of the Regulars for the Crimea, the Legislature of the Province of Canada voted the necessary amount for the equipment and pay of 5,000 Volunteers, which were styled Class *A*, authority being also granted to furnish the arms to Class *B*, but these were to clothe themselves and receive no pay. In May, 1862, a bill was passed for the increase of the Militia. The Trent affair, which had happened in November of the preceding year, gave a valuable impulse to the Volunteer movement. In 1863 a bill was passed to muster and drill 100,000 men for six days a year ; but the arrangement was not satisfactory, and the corps were either disbanded or reduced. The Military Schools were established at that time. A commission sat to discuss military matters, and proposed to assemble 50,000 men for twenty-eight days' training annually, to enrol a reserve of 50,000 more, to divide the country into military districts, and have an armoury in each.

At the Confederation the Parliament of Canada established a Department of Militia and Defence. In 1868 was passed the first Militia Act in accordance with the provisions of the 15th Section of the Union Act, 1867. In 1869, the Imperial Authorities began to withdraw the troops from Canada, and the last troops left in the autumn of 1870, when the 1st Battalion King's Royal Rifle Corps handed over the citadel at Quebec to the Canadian Authorities ; and from that time Halifax has been the only Imperial military station in Canada, with the exception of a small force at Esquimalt.

The Militia Act of 1868 was subsequently amended in various ways. The Act under which the Militia Department conducts its work was passed in 1883. By it the Militia of Canada is declared to consist of all the male inhabitants of Canada between the ages of 18 and 60 ; the first class consisting of men between 18 and 30, being unmarried or widowers without children ; the second class between 30 and 45, unmarried or widowers without children ; and the third class between 18 and 45, married men or widowers with children ; and the fourth class comprises those between 45 and 60, and those liable to serve and called upon in that order.

The Militia is divided into active and reserve land force and active and reserve marine force. The Active Militia land force is composed of corps raised by voluntary enlistment or ballot ; the active marine force is raised in the same way, and composed of sea-faring men navigating the waters of Canada ; and the reserve force, land and marine, consists of all men not serving in the Active Militia for the time being. The period of service of the Active Militia in time of peace is three years ; the period of drill is sixteen days, and not less than eight days in each year ; but the number trained and drilled annually is limited in ordinary circumstances to 45,000. The annual training of the whole force for twelve days is recommended.

The Permanent Militia consists of the Royal Canadian Dragoons, 132 of all ranks, and 90 horses, quartered at Toronto and Winnipeg ; the Royal Canadian Artillery of 2 Field Batteries and 2 Garrison Companies, 344 of all ranks, and 60 horses, quartered at Kingston and Quebec ; the Royal Canadian Regiment of

Infantry, 324 of all ranks, quartered at London, Ont., Toronto, Ont., St. John's, Que., and Fredericton, N.B. The total strength of these permanent corps was reduced in June, 1895 to 800.

The Active Militia consists of 9 regiments of cavalry and 7 other troops (2,115 of all ranks and 1,900 horses); 17 batteries of field artillery (1,345 of all ranks and 497 horses); 5 battalions and 9 other companies of garrison artillery (2,462 of all ranks); 2 companies of engineers (151 of all ranks); and 97 battalions and 6 companies of infantry (28,962 of all ranks), or a total force of Permanent and Active Militia of 35,835 of all ranks. The number of men available for active service in Canada, between the ages of 18 and 45, is about one million.

In 1882 a Government cartridge factory was established in Quebec. During 1894 some million and a half rounds of blank and ball were issued from it, and in 1895, following the purchase of Martini-Metford rifles, arrangements were made for the manufacture of the .303 ammunition.

The Royal Military College of Kingston, founded in 1875, has proved a most successful institution, and of the total number of cadets who have graduated, some 100 have been granted commissions in the Imperial Army. The present commandant is Major G. C. Kitson, King's Royal Rifle Corps, who is assisted by Captain C. E. English, R.A., Captain A. H. Lee, R.A., Captain P. G. Twining, R.E., and Lieutenant W. B. Leslie, R.E.

On nearly thirty occasions since confederation the Active Militia of Canada has been called upon for active service. The efficiency of the force must be gathered from the annual reports of the Deputy Minister of Militia and Defence, and the Imperial Officer Commanding the Militia of the Dominion; and officers are advised to refer to the reports of Colonel (Major-General) Ivor J. C. Herbert, C.B., C.M.G., Grenadier Guards, commanding the force between 1891 and 1895.

It may be interesting to record here that, in connection with the proposal, which has been most influentially taken up in the Dominion, for the closer connection of Canada with the Imperial regiment bearing its name, "The Prince of Wales's Leinster Regiment (Royal Canadians)," the War Office authorities in London have intimated that "the Secretary of State for War and the Commander-in-Chief are prepared to give favourable consideration to any proposals which may tend to foster a connection between the Regular Army and the military forces of Canada, and to further cement the strong feeling of sympathy already existing between the Mother Country and the Dominion."

The Borchardt Automatic Repeating Pistol is now being sold in London, a large number having been sent from Berlin. It is a strange-looking weapon, but of fine workmanship. It fires eight shots of small calibre (.303) as fast as one can crook one's trigger finger. The magazine holds the cartridges, and it is only necessary to pull the trigger to fire them; the "pull off" is smooth and short as in an ordinary weapon, and unlike the scraping movement of a double-acting revolver. The pistols are ordinarily fitted so that a flat wooden shoulder-piece may be readily attached to them to permit their successful use for long-distance shots. Colonel Fosbery, in his recent lecture on pistols, spoke highly of it as a military weapon, and it would be worth while to test its capabilities for that purpose; it will probably prove popular for sporting purposes on account of its portability, combined with accurate shooting up to several hundred yards. The pistols are not, however, particularly cheap, as they cost £6 5s. each, without the leather case. For the latter, which contains spare magazines, cleaning tools, and other accessories, an additional £1 is charged.

ARGENTINE REPUBLIC.—The Standing Army consists of 1 engineer regiment, 1 mountain artillery regiment, 6 field artillery regiments, 12 infantry regiments,

10 cavalry regiments, and the President's Bodyguard. The total amounts to 83 superior officers, 563 officers, and 10,630 men.—*Militär-Wochenblatt*.

FRANCE.—The gap in the South of France railway system in the neighbourhood of Nice is about to be filled up. The War Minister recognises the strategic importance of carrying a line from Le Puget-Théniers to St. André, which would enable troops to be transported to the Italian frontier without overtaxing the resources of the Marseilles line.—*Militär-Wochenblatt*.

The soup lately proposed for adoption in the French Army is composed of 100 kilogrammes of beef-tallow, 5 kilogrammes of carrots, 7 kilogrammes of leeks, 7 kilogrammes of onions, 1 kilogramme of celery, $\frac{1}{2}$ kilogramme of parsley, $\frac{1}{2}$ kilogramme of garlic, $\frac{1}{20}$ kilogramme of basil, $\frac{1}{20}$ kilogramme of thyme, and $\frac{1}{20}$ kilogramme of laurel leaves, with a certain amount of salt, pepper, cloves, etc. The whole is boiled and strained; it is afterwards cooled and formed into a solid mass, which is cut into tablets like chocolate. A tablespoonful of this substance, with water added, makes about $1\frac{1}{2}$ pints of soup. The tablets are said to be suitable for troops serving in hot climates, as they do not melt at a less heat than 137° Fahr.

The reports received from the forces employed in the expeditionary operations in Madagascar, with regard to the aluminum utensils under trial, have been unanimously favourable. Mess tins and other articles made of aluminum were used during the whole duration of the campaign, resisting all changes of temperature and even the action of sea water. Not only was the weight of the articles reduced about one-half by the employment of this metal, but from a sanitary point of view the improvement was very great. For instance, wine could be kept for twenty-four hours in an aluminum canteen without having its flavour altered, which would be an impossibility with a tin utensil. A committee is at present occupied with experiments in darkening the metal, and trials of its power, and that of its alloys, in resisting penetration have already been made and reported upon.—*Revue du Cercle Militaire*.

GERMANY.—*The German Press and War Subsidies*.—The following remarks have been supplied by a correspondent, whose accuracy and knowledge of his subject are unimpeachable:—"The German people for some time past have been undergoing a course of introspection with regard to the history of their own country, and various journals have formulated some of the causes of the dissatisfaction that has arisen from their analytical study.

An article in the *National Zeitung* may serve as an example, and a translation of it presents to English readers a fair measure of the depth of the national feeling:—

"No one in Germany seriously believes that the German military forces can ever be exclusively, or even principally, employed in English interests; but the bitter recollection that the German Princes sold their troops to England during the last century, the subsidies paid by rich England during even the present century, in order to make possible the Austrian Campaigns of 1805 and 1809 against Napoleon, the conspicuous part played by the English Plenipotentiaries in the allied camp during the War of Liberation in 1813 and 1814, these things lie like a nightmare on the German conscience."

During the latter part of the eighteenth and the earlier portion of the nineteenth century, war, with but scant intervals of peace, was the normal condition of the European Continent. The most reckless and devastating operations were practically the work of one nation led by one man.

The unhallowed skill of Napoleon Buonaparte in all that tended to war and to spoliation, when backed by the resources of the wealthy country over which he domineered, left but one sound course open to his intended victims, and that was combination.

A tactless misapprehension of the circumstances of the position, and the

vacillation exhibited by Prussia in 1805, one of the years mentioned by the *National Zeitung*, was the natural forerunner of temporary ruin in the following year to her Army and her freedom. Had her strength been used by the side of Prussia and Austria in the earlier year, Austerlitz, if it became the field of a battle, might well have seen the defeat instead of the overwhelming victory of the French flag. But Prussia acted unwisely towards those who were her allies by nature against the enemy equally dangerous to her and to them. She and they paid dearly for the error; Prussia did worse than merely stand aloof, for at the critical period preceding Austerlitz she prevented northern Russian troops from passing southwards towards the threatening danger.

From 1794, when Prussia was "sitting on the fence," till 1815, Great Britain habitually paid immense sums of money to the Governments of various European countries—Russia, Austria, Prussia, various small German States, Italy, Holland, Belgium, Spain, Portugal—and in later years Denmark, and France herself, all received sums under one or more of four heads, either as (1) direct subsidies; (2) payment and equipment of special troops; (3) loans, of which Great Britain always found the principal and, in many cases, the interest; or (4) guaranteed loans. Great Britain's guarantee enabled the borrowing country to raise money in the market on terms less onerous than would have been the case had that guarantee been absent.

In 1793 the total debt of Great Britain was 248 millions sterling; in 1815 this sum had risen to its maximum of 861 millions. Twenty-two years of nearly constant warfare had added 613 millions to the debt, besides the portentous taxation which ran concurrently; and this burden, growing at the average rate of nearly 28 millions annually, was largely caused by the necessities of others.

Despite the acknowledged inaccuracies of Treasury Returns of that period, the actual payments made by us were more than 57 millions in cash, of which but a small portion has been repaid. The Wellington despatches and other writings of the time tell, all too graphically, the grasping needs of those who not only claimed but received the sums, which we were enabled to pay owing to the discoveries of Arkwright and of Watt; the start we got by the mechanical inventions of our own people kept looms and machinery employed, whilst foreign nations were still wrestling with handwork of decadent value.

The sea-command dearly, but not too dearly, bought by the Navy of Great Britain, enabled the country to increase her over-sea trade, and freed her from a nightmare of the direst sort—the starvation of her people.

No Englishman, after the long interval, willingly re-opens this closed page of old-world history; far rather would he turn to those pages relating the gallant loyalty of Marshal Blücher on the 17th and 18th June, 1815. German writers declare themselves to be now suffering from another form of nightmare, the recognition of unliquidated debt; if their diagnosis is accurate, the remedy is simple.

We advanced more than 23 millions sterling to the German States, of which but 2½ millions were repaid as capital and interest in 1823. The account was then closed, the remaining sums were taken on our National Debt, and we, at least, have shown no inclination to re-open the question."

By an Order of the Emperor, dated 9th November, 1896, the Medical Staff of the Navy has been separated from that of the Army. The rule was that the principal medical authority of the Navy served under the orders of the Surgeon-General of the Army. Now the former is placed in an independent position, being responsible only to the head of the Navy and the Emperor.—*Deutsche Heeres-Zeitung*.

A memorial is about to be erected to the late General Baron von der Tann, who commanded a Bavarian army corps in the Franco-German War. It will be placed in the town of Tann, in the Rhön Mountains, the ancient seat of the Tann

family, and a committee has been appointed to collect subscriptions. It is believed that North and South Germans will combine to make this a national recognition of the union of the German States.—*Militär-Wochenblatt*.

ITALY.—The number of Government stallions in Italy is said to be gradually decreasing. In 1895 there were 567; in 1896, 562. The English horse "Melton," after serving for five years, was sold for 10,000 francs more than he cost. Recently out of a hundred and twenty-three stallions offered to the Government only twelve were accepted, two of them being English. In the course of 1897 there will be a further decrease.—*Deutsche Heeres-Zeitung*.

The railway station course of instruction will commence on the 1st February, 1897, and last for two months, fifteen days being allotted to lectures, and forty-five to practical exercises. Regiments of cavalry and infantry will send a certain number of subalterns to undergo the course, together with a proportion of captains in the auxiliary service, all of whom will be divided into five groups, viz.:—40 officers at Alexandria, 28 at Verona, 21 at Bologna, 22 in Rome, and 27 at Naples. During the practical part of the course the officers will be employed at the railway depots of these towns or at neighbouring stations.—*Revue du Cercle Militaire*.

RUSSIA.—General Dragomiroff states that of 75 batteries of field artillery, only 24 came up to the standard which he considers necessary—namely, the ability to fire sixteen rounds in a minute. This is for 8-gun batteries. The general lays down twelve rounds as the *minimum* for the horse batteries of six guns.—*Deutsche Heeres-Zeitung*.

Twenty different kinds of snow shoes have been tried by the army authorities during the past year. Those from Finland and Telemarken proved to be the best for military purposes, although the Norwegian shoes were the best for speed.

A military club-house of an imposing character is in course of erection in St. Petersburg. Garrison and regimental clubs were officially sanctioned in 1874 for the purpose of "drawing the members together and fostering the bonds of comradeship which should exist among them; for co-operation in promoting their instruction; for furnishing them with diversion in their hours of leisure; and ameliorating the conditions of their life." The new club in the capital is intended as a place of re-union for all the officers of the Russian Army, and also for the hospitable reception of distinguished foreign officers. It is, therefore, decided to make it, externally, as grand a building as possible; and, internally, it will be fitted up sumptuously with a view to the comfort, convenience, and pleasure of its members. A sum of 1,200,000 roubles has been set apart to pay for the building—110,000 for furnishing, and 35,000 for the first year's outlay.—*Revue du Cercle Militaire*.

SPAIN.—The wounded soldiers coming home from Cuba and the Philippines, are carried by the Spanish steamship companies as second-class passengers, and, at times, unoccupied first-class cabins are offered to them. The railway companies have signified their readiness to carry the wounded as second-class passengers, although the State allowance is only third-class fare. On board the steamers the soldiers are fed and treated, under the doctors, in the most liberal manner. The Queen of Spain has caused her thanks for this kindness to be conveyed to the heads of the various companies concerned.—*Militär-Wochenblatt*.

General Weyler has improvised a corps of mounted infantry in Cuba, for the purpose of assisting the cavalry. It has been found in recent fights that not only was infantry fire necessary to produce the desired results, but that the enemy should be taken by surprise more than had yet been the case. It was also necessary that he should be more rapidly followed. The horses on which the men are mounted have been captured from the insurgents.—*Militär-Wochenblatt*.

NAVAL AND MILITARY CALENDAR.

DECEMBER, 1896.

2nd (W). General Billot's scheme, for the formation of a French Colonial Army under the War Office, instead of the Minister of Marine, rejected.

" " 5th Bombay Mountain Battery left Suakin for Bombay in the transport "Loodiana."

" " Egyptian Government condemned by Court of Appeal to refund the half-million taken from the Reserve Fund for the Dongola Expedition.

" " News received of the massacre at Mukdishu, East Africa, by Somalis, of the Italian Consul-General of Zanzibar, 9 naval officers, and 70 Askaris.

3rd (Th). Second-class cruiser "Indefatigable" commissioned at Portsmouth for North America and West Indies.

" " First-class torpedo-gunboat "Hussar" commissioned at Devonport for Mediterranean.

" " Launch of second-class cruiser "Furious" at Devonport.

4th (F). Launch of the second-class cruiser "Amazonas" at Elswick for the Brazilian Government.

" " 36th (Sikh) Bengal Infantry left Suakin for Karachi in the transport "Peshawur."

" " Insurgent leader Antoni Maceo defeated and killed at San Pedro, in Cuba, by Spanish troops under Major Cirujeda.

5th (Sat). H.M. sloop "Dolphin" paid off at Sheerness from the Mediterranean.

" " Launch of the first-class gun-boats "Vicksburg" and "Newport" at Bath, Maine, for the U.S. Navy.

" " Rebels in Uruguay defeated by the Government forces, and flight of their leader, Aparicio Sarouba.

" " Sir G. Taubman-Goldie, K.C.M.G., left London to assume command of political and military operations of the Royal Niger Company, in the Niger Soudan.

6th (S). Launch of second-class cruiser "Svetlana" at Havre for the Russian Government.

8th (Tu). Field-Marshal Lord Wolseley unveiled at Perth the statue commemorating the raising of the 90th Light Infantry in 1794.

" " Portuguese at Lourenço Marquez attacked German Consulate and insulted British flag.

" " First-class battle-ship "Ramilies" recommissioned at Malta.

" " Launch of second-class cruiser "Gladiator" at Portsmouth.

9th (W). Brigadier-General C. C. Egerton, C.B., D.S.O., and Staff and the last of the Indian Contingent left Suakin for Bombay.

10th (Th). 1st Bn. King's Royal Rifle Corps left Bombay for Mauritius and Cape Town in the Royal Indian Marine Steamer "Warren Hastings."

11th (F). 68th Field Battery R.A., arrived at Southampton from Bombay in the transport "Dunera."

" " Imperial troops (except 200 7th Hussars) left Matabeleland for Natal.

15th (Tu). 100 Haussas sent to Odeketu, Lagos, to restore order.

16th (W.) Rebel forces in the Philippines increased, and Spanish troops withdrew to Manila, and further reinforcements despatched from Spain.

17th (Th). Telegraph wire between Suakin and Tokar cut by Dervishes.

21st (M). Launch of third-class cruiser "Pactolus" at Elswick for the Government.

23rd (W). Rising of Galishwe's natives in British Bechuanaland.

" " First-class battle-ship "Howe" paid off at Chatham from the Mediterranean.

25th (F). Bechuana chief Galishwe attacked and driven from his position.

" " Colonel Alderson, with the Mashonaland column, left Umtali for the coast.

27th (S). Rebel position at Pokwani captured by detachments of Cape Police, Diamond Fields Horse, and Kimberley Rifles, and the rising suppressed.

28th (M). Sir G. Taubman-Goldie, K.C.M.G., landed at the mouth of the Forcados, on the Niger, for Lokaja, military headquarters of the Royal Niger Company.

31st (Th). First-class armoured-cruiser "Warspite" paid off at Chatham.

FOREIGN PERIODICALS.

NAVAL.

ARGENTINE REPUBLIC.—*Boletin del Centro Naval*. Buenos Aires: November, 1896.—“The Future Naval Port.” “Some Considerations on the Battle of the Yalu *à propos* of the Memoirs of Admiral de Chasseloup-Laubat.” “On the use of Steel for Guns” (*continued*).

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens*. No. 1. Pola and Vienna: January, 1897.—“On Artillery Tactics and Manoeuvring for Battle at Long Ranges.” “On Deflectors.” “The Reforms of the Naval Schools in Austria-Hungary.” “The work of Raising the Danish steamer ‘Johan Siem,’ sunk in the Kaiser-Wilhelm Canal.” “Boiler Accidents in French Ships.” “The German Naval Estimates for the Administrative Year 1897-98.” “Book Notices.”

FRANCE.—*Revue Maritime*. Paris: November, 1896.—“Questions of Naval Strategy.” “Electric Installation of the cruiser ‘Bugeaud.’” “A Practical Guide for Courts-Martial” (*continued*). “Help for the Victims of Naval War” (*concluded*). “The Victualling of the Navy and Working Capital.” “The 200th Anniversary of the Russian Fleet.” “Trials of the ‘Marco Polo.’” “Development of the Naval and Military Forces of Japan.” “The new United States battle-ship ‘Kearsage.’” “The Maritime Fisheries.”

Le Yacht. Paris: 5th December, 1896.—“The Naval Budget for 1897.” “Report of the Parliamentary Commission on the Naval Budget.” “The 3-ton racing cutter ‘Frimousse’” (with plans). “Instantaneous Photograph of the ‘Forban’ steaming 16 knots.” 12th December.—“The Naval Budget for 1897” (*concluded*). “The new Argentine cruiser ‘Garibaldi’” (with photograph). 19th December.—“The Credits for the Navy.” “The United States armoured cruiser ‘Brooklyn’” (with plans). 26th December.—“The Navy in Parliament.” “The Pneumatic Engines for the Turrets of the United States monitor ‘Terror.’” “Constantinople Letter.”

Le Moniteur de la Flotte. Paris: 12th December, 1896.—“Naval Programmes.” “The Navy in Parliament.” “The Hurricane.” 19th December.—“The Budget for the Navy.” “The Navy in Parliament.” 26th December.—“*À propos* of Dumont D’Urville.” “What makes Private Initiative in England.”

La Marine Française. Paris: 10th December, 1896.—“History of High-Angle-Fire Guns for small Vessels.” “M. Lockroy’s Amendment.” “Some Observations on the Naval Budget.” “The Political and Diplomatic Fortnight.” “Navigation and Foreign Commerce.” 25th December.—“The Personnel of the English Navy.” “The Budget of the Navy.” “Submarine Navigation” (*continued*). “The Political and Diplomatic Fortnight.” “French and English in Egypt and the Lower Niger.”

GERMANY.—*Marine Rundschau*. Berlin: January, 1897.—“The earlier History of the Fleet.” “On Measurements at Launches” (with three plans). “Trials of the new fourth-class battle-ship ‘Odin.’” “The new Fishing Harbour

at Geestemünde" (with plan). "The United States Navy" (with tables) (*concluded*). "The Relations between the Construction of a Ship and the State of Health on Board."

ITALY.—*Rivista Marittima*. Rome: December, 1896.—"Yarrow and Thornycroft Water-tube Boilers" (V. Malfatti). "On the Employment of Torpedo-boats" (A. Resio). "The German Colony in East Africa" (F. Mongiardini). "The Navy and our Grain Supply" (A. Teso). "On a Problem in Naval Strategy" (G. Lazzari and G. Pesci). Letters to the Director:—"Du Temple Boilers" (V. Malfatti). "On Some Properties of Increasing Latitudes" (E. Molino). "Naval Notes, etc." "Commercial Relations between Italy and Tunis." "Suspension of the Fishery in various points of the Italian Coasts." "Canals between the Elbe and Danube; and New York and Philadelphia." "Notices of Books." Coloured plate, "Old-time Cruisers."

L'Osservatore Navale. Palermo: September, 1896.—"The Oceanography of the Senegambia and Guinea Regions." "The Personnel in Command of the Royal Navy." "Notes on the Italian Naval Manceuvres." October.—"The Flying Squadron." "Port Captains." "The Italian Naval Manceuvres." "On Fishing and Trawling Gear."

SPAIN.—*Revista General de Marina*. Madrid: December, 1896.—"Some Notes on the Steering of Ships." "Collisions at Sea." "Numeral Determinations of Latitude." "The Boilers of the 'Terrible.'" "Armour and Heavy Guns." "Widening and Deepening of the Suez Canal." "Madagascar; the Island of Santa Maria." "Our Torpedo-boat Destroyers."

MILITARY.

AUSTRIA-HUNGARY.—*Militär-Zeitung*. Vienna: 1st December, 1896.—"On Duelling." "The English Mounted Infantry." 9th December.—"The Arrangement of the Vienna Barracks." "The Danube-Oder Canal." 17th December.—"The Venezuela Question and the Peace Society." 25th December.—"Christmas Wishes." "Extra Allowances." "The Importance of Topography in the Science of War."

Mittheilungen über Gegenstände des Artillerie- und Genie-Wesens. Vienna: December, 1896.—"Waterproof Material for the use of the Army." "Screw-piles for Bridge-building in Denmark."

Organ der Militär-wissenschaftlichen Vereine. Vienna: December, 1896.—"Royal and Imperial Army Regulations, 1896." "Firing from Covered Positions."

FRANCE.—*Revue du Cercle Militaire*. Paris: 5th December, 1896.—"Military Refuges in the Italian Alps." "Young Soldiers on Joining." "The Wardrobe of the Emperor William." 12th December.—"The Island of Anticosti." "Military Refuges in the Italian Alps" (*continued*). "The Italian Army and the Proposed Reforms of General Pelloux." 19th December.—"The new Military Club in St. Petersburg." "Military Refuges in the Italian Alps" (*concluded*). "Camping Requisites in Aluminum." 26th December.—"The Blue Devils: A Souvenir of Bazeilles." "The Initiative at the German Grand Manceuvres."

Journal des Sciences Militaires. Paris: December, 1896.—"The Chimera of Disarmament" (*concluded*). "Introduction to the Scientific Study of Tactics." "Study on the Organisation of Quick-firing Artillery."

Revue d'Artillerie. Paris: December, 1896.—"Note on the Instruction of Recruits in the German Field Artillery." "A Study on Material for the Swiss Artillery" (*concluded*). "A Study on Sporting Rifles."

Revue de Cavalerie. Paris: December, 1896.—“Letters of a Cavalryman” (continued). “Regulations for the Russian Cavalry Manœuvres.” “The Love of the Horse.”

Le Spectateur Militaire. Paris: December, 1896.—“General Trochu.” “The Territorial Army in the Autumn of 1896.” “Report on the War Budget of 1897” (continued).

Revue Militaire de l'Étranger. Paris: December, 1896.—“The Instruction of 1st July, on the Firing of the German Field Artillery.” “Mountain Operations” (continued). “The Italians in Africa” (continued).

Revue du Genie Militaire. Paris: December, 1896.—“Study on a New Route from French Guinea towards the Niger.” “Practical Instruction in the Properties of Iron and Steel as used for Building.”

GERMANY. — *Militär-Wochenblatt.* Berlin: 2nd December, 1896.—“Duke William of Würtemberg.” “The Imperial Manœuvres from 7th to 12th September, 1896.” 5th December.—“The Imperial Manœuvres from 7th to 12th September, 1896” (continued). “Our Hospital Assistants.” 9th December.—“The Imperial Manœuvres from 7th to 12th September, 1896” (continued). “Musketry Instruction, with Thoughts on the Development of Battle-fire.” 12th December.—“Musketry Instruction, with Thoughts on the Development of Battle-fire” (continued). “The Disposition and Conduct of Manœuvres.” 16th December.—“The Eighty-first Birthday of General von Löbell.” “The Disposition and Conduct of Manœuvres” (continued). 19th December.—“Life of General Adolf von Glümer.” “Explosion of Mines by Electricity.” 23rd December.—“The Italian War Minister's Plan of Organisation.” “Experiments with Snow-shoes in Russia.” 30th December.—“Remarks on the Heavy Field Batteries of Foreign Armies.”

Jahrbücher für die deutsche Armee und Marine. Berlin: December, 1896.—“The Italian-Abyssinian War of 1895-96” (continued). “The Italian Army and Navy in the first half of 1896.” “The Year 1796: a Contribution to the History of the War of Revolution.”

Internationale Revue über die Gesammten Armeen und Flotten. Dresden: December, 1896.—“The German Imperial Manœuvres of 1896.” “The British Army and Navy.” “Russian Railways in 1896.” “The French Grand Manœuvres” (continued). “The Roumanian Army.” “The Egyptian Soudan.”

Deutsche Heeres-Zeitung. Berlin: 2nd December, 1896.—“The Siege of Paris, 1870” (continued). “The Employment of Army Corps Artillery.” 5th December.—“The Chancellor's Statement on the Duelling Question, on 17th November.” “The Employment of Army Corps Artillery” (continued). 9th December.—“Preparation of the Attack on a Defensive Position by the Artillery.” “The Employment of Army Corps Artillery” (continued). 12th December.—“The Employment of Army Corps Artillery” (continued). 16th December.—“The Employment of Army Corps Artillery” (continued). 19th December.—“Aid to the Wounded on the Battle-field.” “The Employment of Army Corps Artillery” (continued). 23rd December.—“The Life and Work of General Carl von Grolman, of the 5th Army Corps.” “The Employment of Army Corps Artillery” (continued). 30th December.—“The Life and Work of General Carl von Grolman, of the 5th Army Corps” (continued).

Neue Militärische Blätter. Berlin: December, 1896.—Has not been received up to time of going to press.

ITALY. — *Rivista di Artiglieria e Genio.* Rome: November, 1896.—“Convergence Diagrams.” “Proposal for a Cheap Railway.” “Study of the

Telephone." "Firing on Captive Balloons." "Progress in the Manufacture of Explosives." "Experiments in Switzerland with Krupp's 6·5-centimetre Mountain Gun." "Wolfert Dirigible Balloons." "The Photo-Chronograph for Measuring the Velocity of Projectiles."

RUSSIA.—*Voiennii Sbörnik*. St. Petersburg: November, 1896.—Has not been received up to time of going to press.

SPAIN.—*Memorial de Ingenieros del Ejército*. Madrid: November, 1896.—"Practical Resistance of Arches." "Convenience of the Duplex Transmission in some Field Telegraph Stations." "Enclavamientos." "Barrack Fittings: The Soldier's Bed."

Revista Técnica de Infantería y Caballería. Madrid: 15th December, 1896.—"Recruiting (General and Compulsory Service)." "On Attack and the Preparation for Attack." "The Military Forces of Spain under Arms." "The Cutlass." "Contraband of War according to International Law." "The Yule Log in Camp."

SWITZERLAND.—*Revue Militaire Suisse*. Lausanne: December, 1896.—"The Manœuvres of the 3rd Army Corps." "Suggested Arrangements for Auxiliary Carriages for the Transport of the Wounded."

NOTICES OF BOOKS.

The Principles of International Law. By T. J. LAWRENCE, M.A. LL.D., Lecturer in Maritime Law at the Royal Naval College, Greenwich, etc. 8vo. London : Macmillan and Co., 1896.

This useful and valuable book should be read and studied by every naval officer. The author traces the development of International Law, showing its relation, on the one hand, to a few great ethical principles, and, on the other, its dependence upon the hard facts of history; and he has succeeded in placing before students a clear and most readable outline of one of the most important branches of political science. The book is divided into four parts. Part I. deals with the nature and history of International Law; while Chapter III. traces its history from the early days of Greece and Rome down to the present time. Part II. treats of the laws observed by States during peace; giving the rights and obligations connected with Independence, Property, Jurisdiction, Equality, and Diplomacy. Parts III. and IV. are the most important to naval officers, devoted as they are to the Law of War and the Law of Neutrality. In the chapters of Part III. the fullest information will be found as to the Definition of War, and its laws in relation to persons of "Enemy Character" and "Enemy Property" on land and at sea; with a chapter on the Agents, Instruments, and Methods of Warfare, and another on the Non-hostile Intercourse of Belligerents. In Part IV. Neutrality is defined, with the duties of Belligerent and Neutral States to each other, while chapters are devoted to Neutral Commerce, Blockade, Contraband Trade, and Unneutral Service, all of which are subjects which it is of great importance for naval officers to master; and the author has so treated them, that all dryness is taken away from what is generally considered a dry subject. In a word, not only is Dr. Lawrence's book a most valuable work of reference, but it is replete with interest from beginning to end; and any student of the subject is not likely to put the volume on one side, when once he has commenced it, until he has mastered it. Many naval officers have attended and benefited by Dr. Lawrence's lectures at Greenwich, and they cannot do better than add his work on International Law to their libraries, while the Admiralty should certainly add it to all ships' libraries.

The Nelson Memorial: Nelson and his Companions in Arms. By J. K. LAUGHTON, M.A., R.N., Professor of Modern History, King's College, London. London : G. Allen, 1896.

In his previous life of Nelson, written for the "Men of Action Series," Professor Laughton has narrated the career of England's great admiral; and thanks to his intimate knowledge of our Naval History, the result of years of laborious researches into all available sources of information, that work has taken its place as the standard biography of the hero of the Nile and Trafalgar. Professor Laughton's latest book may be fitly considered as the coping-stone of his previous life of Nelson, because he here more fully portrays, not so much the life of the great sailor, the consummate tactician and leader of fleets, as the character

of the man "with a man's passions and a man's weaknesses, but as a man of transcendent genius, endowed with that grand attribute of genius, the capacity of taking infinite pains." The author fills up some blanks and throws light on facts that have remained somewhat obscure in previous biographies of Nelson, while the little glimpses he gives of many of the other distinguished brothers-in-arms of the great admiral add much to the interest of the book. Professor Laughton is at some pains to throw light on Nelson's unfortunate relations with the notorious Lady Hamilton, and he does not spare her ladyship's character or palliate Nelson's own share in the discreditable episode, while he relates that the King barely acknowledged Nelson when he appeared at Court, and immediately turned away to speak to some one else: a treatment of the *Victor of the Nile* which shews pretty clearly the strong opinion held by the King with regard to the scandal. One of the most interesting incidents in the book is the brief description of the fight in which the "Guillaume Tell," the surviving French ship from the Nile, after a most brilliant running fight, had to haul down her colours to the "Foudroyant," "Lion," and "Penelope," the honours on the English side being undoubtedly due to the last-named ship, which, although only a small frigate, yet hung on to the chase of the great line-of-battle-ship with a hound-like determination, that alone rendered it possible for the other two ships to come up; it was a contest creditable in the highest degree to all parties, and one to which Frenchmen can rightly refer with legitimate pride. The numerous portraits in the book are most excellent as works of art besides being of high interest; and the other illustrations, with the fac-similes of autographs, etc., combine to make Professor Laughton's work one which should find a place in all libraries.

Naval Actions of the War of 1812. By JAMES BARNES. London: Osgood, McThaine and Co.

In his preface, Mr. Barnes informs his readers that it is not the intention to instruct that has caused him to compile and collate the material used in his pages. "He has been influenced by his own feelings . . ." It has been his pleasure, and this alone is his excuse.

His work certainly needs a good deal of excusing, unless, indeed, fiction and half-truths are the best vehicles for "forming a national spirit," "and giving to the sons of America's new citizens a pride in her own national history."

For an account of any naval actions in which British men-of-war were engaged during the great wars of 100 years ago the Englishman naturally turns to James, but, unfortunately, that most accurate and generally impartial historian becomes a special pleader when describing our contests with the Americans. His contemporaries across the water were far more inaccurate, and quite as bitter, so that, until Roosevelt's excellent work came out in America in 1882, there was every excuse for the many incorrect accounts of this war that may be found in the various standard histories. But Mr. Barnes, in compiling his book in 1896, can have no such excuse. He does not quote a single authority, but his book bears a most suspicious resemblance to certain treatises published in America shortly after the war of which Roosevelt, himself a most patriotic American, writes:—

"Every little American author crowded over Perry's 'Nelsonic victory over a greatly superior force.' The 'Constitution' was declared to have been at a disadvantage when she fought the 'Guerrière,' and so on *ad infinitum*. But these writers have all faded into oblivion, and their writings are not even referred to, much less believed."

Thus Barnes writes:—

Perry's fleet mustered 55 guns. Barclay had 63 guns, not counting swivels, that is, more than 8 guns to the good.

And again:

The "Enterprise" carried 14 18-pr. carronades and 2 long 9-prs.

The "Boxer" 16 " " " " and had 102 men.

The truth being as demonstrated by Roosevelt, checked by James:—

Weight of Perry's broadside from 54 guns, 936 lbs.

" Barclay's , , 63 , 459 lbs.

The "Enterprise" (American) carried 14 18-pr. carronades and 2 long 9-prs.

The "Boxer" (British) , 12 , , , 6-prs.
and had 66 men.

Mr. Barnes, in fact, scarcely ever gives figures as to the relative forces of the combatants unless they are incorrect or misleading, and always to the advantage of the Americans; the mistakes cannot, therefore, be due to carelessness. Certain actions which did not show off the Americans to the best advantage are altogether omitted, such as the captures of the "President" and the "Argus"; but these would, it must be concluded, be considered out of place in a panegyric of American heroes. Nor as a panegyric is the book entirely satisfactory, as for example when he thus describes "the glorious old Commodore Isaac Hull":—

"He was a large, fat man, whose excitable temperament was held in strong control. . . . 'Now, boys,' he shouted, 'pour it into them.' It was at this point, so the story goes, that Hull, crouching in his excitement, split his tight knee-breeches from waist-belt to buckle."

Surely, when it is thought worth while to publish a book on both sides of the Atlantic, readers have a right to expect better stuff than this. It is possible that Mahan and Roosevelt have made people in this country imagine that all American writers on Naval History are likely to be talented and impartial. At any rate, they will now be undeceived, but still we hold strongly that on both sides of the Atlantic truth is held to be of the first importance, and we do not think that this book will last any longer than its predecessors of the same type so strongly condemned by Roosevelt. The lessons of the war are clear and of the greatest interest. The Americans, with their small number of well-built, well-manned, and specially powerful cruisers, won well-deserved victories over our frigates and sloops, which were not only inferior in size, weight of metal, and crew, but also, as a rule, inferior in gunnery. Such brilliant exceptions as the victory of the "Shannon" only accentuated the necessity of careful training, not only in seamanship but in gunnery. But the author's contention that England's vaunted and successful Navy received as great an overthrow as her arms had received on land some thirty-seven years before, is utterly untenable. The line of battle-ships forming the strength of our Navy were never engaged, and the American coast was blockaded very much as if no American frigates existed. The book has some good illustrations, which are indeed the best part of it.

Information in War: its Acquisition and Transmission. By Colonel G. A. FURSE, C.B.

The title speaks for itself, and the book is a careful compilation of opinions and facts, showing how the duties necessary for obtaining information as to the enemy are to be obtained.

Colonel Fursé suggests that a trained intelligence staff should be maintained, with a permanent cadre, so that when war breaks out there shall be no difficulty in organising a proper intelligence department.

He deals with the duties of cavalry covering an army; the training of cavalry for exploration; the duties of patrols and scouts; and the carrying out of reconnaissances.

A chapter is dedicated to a discussion of facts which indicate the state of the enemy's forces. Altogether the book may be recommended to those who wish to acquire a general knowledge of the subject.

An Epitome of the Chino-Japanese War, 1894-95. By Captain N. W. H. DU BOULAY, R.A. 1896. Official. Price 1s. 3d.

This book, which was compiled in the Intelligence Division, contains a brief but very interesting summary of the war between China and Japan. The first chapter, dealing with the naval and military forces of the two countries is alone worth reading. The other chapters record the events which led up to the war, the campaign in Korea and in Southern Manchuria up to the commencement of December, 1894, the Port Arthur campaign, the events in Manchuria from the commencement of February, and the conclusion of the war. In the appendices will be found much valuable information regarding the strength and losses on both sides, and the expenditure of ammunition by the Japanese artillery and infantry in the principal battles, the movements of the headquarters of the Japanese armies, and their order of battle.

Presented by the Secretary of State for War.

Officers' Book, 53rd Regiment.

This is a MS. book, evidently regimental, giving the paymaster's dealings with the officers of the regiment, between 1796 and 1799. The field officers were Lieut.-Colonel John Abercromby, Lieut.-Colonel Stafford Lightburn, and Major Thomas Brisbane.

Presented by S. M. Milne, Esq.

Adjustable Pointers for Concentrating the Fire of Guns in Groups, worked by Position-finder and for Drift Correction. By Major LATHAM C. M. BLACKER, R.A. Pamphlet. Woolwich, 1896.

An ingenious arrangement for concentrating the fire of groups of guns; but it is open to question whether it is not preferable for the group officer to order the necessary correction to each gun by use of a table of corrections to be applied to the reading of the training dial of the position-finder, and so to save further complications on the gun mounting.

Some power of concentration is of great importance at short ranges against armoured ships, and with a perfect system of orienting the training arcs of the guns of a battery a small card of corrections for each group should suffice, and could be prepared locally.

Histoire des Relations de la France avec Venise du XIII^e Siècle à l'Avènement de Charles VIII. By P. M. PERRET. 2 vols., 8vo. Paris, 1896. Price £1 5s.

Fürst Alexander I. von Bulgarien (1879-1896). By A. F. GOLOWNINE. 8vo. Vienna : Carl Fromme, 1896. Price 14s.

Tours Capitale. La Délegation Gouvernementale et l'Occupation Prussienne (1870-1871). By Mgr. C. Chevalier. 8vo. Tours : A. Marne et Fils, 1896. Price 5s.

Geschichte des Russischen Heeres vom Ursprunge desselben bis zur Thronbesteigung des Kaisers Nikolai I. Pawlowitsch. By F. VON STEIN, Kaiserlich Russischem Hofrath. 8vo. Leipsic : Zuckschwerdt and Co., 1895. Price 9s. 6d.

Geschichte der Entwicklung des Russischen Heeres von der Thronbesteigung des Kaisers Nikolai I. Pawlowitsch bis auf die Neueste Zeit. By KRAHMER, General-Major z.D. Part I. Leipsic : Zuckschwerdt and Co., 1896. Price 5s. 6d.

Studien über den Krieg. Auf Grundlage des Deutsch-französischen Krieges 1870-71.

By J. VON VERDY DU VENOIS, General der Infanterie. Part II., 2nd Section. Berlin: Mittler und Sohn, 1896.

Leitfaden der Allgemeinen Kriegsgeschichte. Zum Gebrauche an den K.u.K. Militär-Akademien. Verfasst im Auftrage des K.u.K. Reichs-Kriegs-Ministeriums. 8vo. Vienna: Seidel und Sohn, 1896. Price 9s.

La Campagne de 1813. Par GEORGES BERTIN. 8vo. Paris: E. Flammarion, 1896.

La France aux Colonies. Par MAURICE WAHL. Paris: Ancienne Maison Quantin, 1896.

L'Allemagne 1789-1810 (Fin de l'ancienne Allemagne). Par E. DENIS. 8vo. Paris: Ancienne Maison Quantin, 1896.

Journal Illustré de la Campagne de Russie, 1812. Par un Témoin Oculaire. Introduction par ARMAND DAVOT. Small folio. Paris: E. Flammarion, 1895.

Geist und Stoff im Kriege. Vol. I. 8vo. Von C. VON B. K. Vienna and Leipzig: Wilhelm Branmüller, 1896.



MAJOR-GENERAL ROBERT ROSS.

(Killed at Baltimore, 1814).

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